

# AMERICAN BUILDER

## THE WORLD'S GREATEST BUILDING PAPER

Vol 41.

## CONTENTS FOR MAY, 1926

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PROTECTION FOR OUR READERS—The publishers of the AMERICAN BUILDER reserve the right to decline any advertising they believe is detrimental to the interest of its readers; to edit advertising copy and to change or eliminate any statements that reflect injuriously or cast discredit upon other building products, machinery, equipment, supplies or tools.

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### Building Record for March

THE value of building permits filed in March in 535 cities totaled \$440,509,463, according to figures compiled by S. W. Straus & Company. The total in the 440 cities of this list which submitted comparable figures was \$427,947,641 compared with \$418,066,202 last March. For the quarter, the total in these places was \$971,449,799 compared with \$952,293,434 in the first quarter of 1925.

The gain in these cities was 2 per cent over the same month in 1925 and also 2 per cent over the first quarter of last year.

The totals show an increase over February of approximately 58 per cent which represents slightly more than the normal seasonal recovery over February. This is significant because in January and February the change from the preceding month to be explained partly by severe weather conditions, which were referred to in our survey last month, and partly by the fact that building activities the last few months of 1925 were on a very high level.

These figures are based on building permit values which are considered by AMERICAN BUILDER to be the most reliable index to building activity which can be had. However, it should be borne in mind that the reported cities represent only a fraction of the population. For instance, the population of the cities reporting in Pennsylvania is only 5 per cent of the total population of the state. In other states it varies. In Alabama and Aribona, it is 14 per cent of the population of each state. In Illinois, it is 53 per cent. To the building permit figures reported each month should be added for unreported residential construction at least 50 per cent of the reported residential values in order to get an adequate picture of the complete national total.



### The Deferred Yield Tax

TWO of the southern states, Louisiana and Alabama, have taken advanced steps and provided for modification of the taxing system as an encouragement to reforestation. In these states private lands devoted to tree growing may be placed under contract with the state and during the period of the contract an annual tax is paid on the land only. The growing trees and timber are not taxed annually but pay a deferred yield tax when the trees are cut and the income from them is derived by the owner. The deferred yield tax system seems to be growing in favor in the various southern states and extension of this form of legislation is expected throughout the South when the public becomes sufficiently awakened to perform its share of the task of producing a permanent and adequate supply of timber.



### To Unify Wire and Metal Gages

THE elimination of the confusion caused by 30 wire and sheet metal gage systems now in use in this country is to be brought about as the result of a conference held on March 18, 1926, in the Engineering Societies Building, New York City, and attended by rep-

resentatives of twenty-five organizations interested in all phases of the subject, which includes wires, sheets and tubes of metals of all kinds.

Unanimous decision was reached that the confusion in the purchase and sale, and in the use of these products, brought about by the existence side by side of the numerous conflicting gage systems, has become intolerable, and that industrial practice should be unified in a simple consistent plan. The detailed technical work will be in the hands of a sectional committee broadly representing all interested industrial groups and working under the auspices of the American Engineering Standards Committee.

The trend of opinion at the conference strongly favored the elimination of all gage numbers and the use of a simple system of designating sizes in decimals of an inch. The decision, however, on the exact form of the solution was left to the sectional committee.



### Safety Campaign Pays

SAFETY first activities carried on in the Portland Cement Association have, since 1920, reduced the number of accidents in portland cement mills 45.2 per cent according to a recent announcement by William M. Kinney, general manager of the association. In commenting on this record, Mr. Kinney said. "When our members began this safety work 13 years ago they found to their surprise that the responsibility for accidents lay about 25 per cent with the manufacturers and about 75 per cent with the men themselves.

"We quickly induced our members to protect their machinery and then began an intensive campaign among the workers. The cement makers undertook all this work with the idea that they were simply spending money for the benefit of their employes, but they quickly found that it paid them in actual dollars and cents, through improvement of their manufacturing personnel, reduction in delays and saving in accident compensation; hence they have continued it enthusiastically."



### Home Building Increases

THE proportion of residential building to all other types of construction is growing in America each year. An accurate check of the different classifications of construction shows that in 1925 nearly 62 per cent of the building in the United States was residential, based upon floor space. The proportion in 1920 was 34 per cent; in 1921, 52 per cent; in 1922, 54 per cent; in 1923, 59 per cent, and in 1924, 61 per cent.

As a home building nation the United States unquestionably exceeds all others at the present time. Dividing construction into four classes, namely residential, commercial, industrial and educational, in 1925 we find that the second largest volume was commercial, being 16 per cent of the total. The next largest was industrial with 7½ per cent and the next educational with 6½ per cent. All other classifications total 8 7/10 per cent.

# When Time Means Money Here is a Way of Saving It

Emergencies in your work often demand rush construction. Then **time** is vital. Then **time** must be saved. Then **time** means money.

In such cases you do not want to wait the time usually required for concrete to reach the desired strength. You do not need to.

By using well-authenticated methods and standard **Universal** cement, the same quality **Universal** regularly used, you can obtain strong concrete in **3 days** and at the same time get concrete that is much better and much stronger forever after.

Detailed information on how to obtain time-saving strong concrete in **3 days** with standard **Universal** cement will be sent promptly on request to

## Universal Portland Cement Co.

Chicago Pittsburgh Minneapolis Duluth Cleveland Columbus New York

### Concrete for Permanence



# Getting Away From the Commonplace

*A Music Store in Which Beauty, Utility and Appropriate Novelty Combine*

**W. R. Yelland, Architect**

**I**N these days of specialization it is not enough that a building be well constructed, but both artistry of line and proportion must be brought out and lend themselves fully to the specific need of the business which it is to house. All of these things have been embodied in the new building of Tupper & Reed, music dealers, Berkeley, Calif., with Mr. W. R. Yelland as the architect.

Choosing a style familiar to rural northern Europe, all details have been carefully weighed and selected, with the result of excellent mass effect and the discreet use of decoration, yet withal detracting in no way from the charm found in a peasant dwelling.

The building, which is two story, is erected of selected

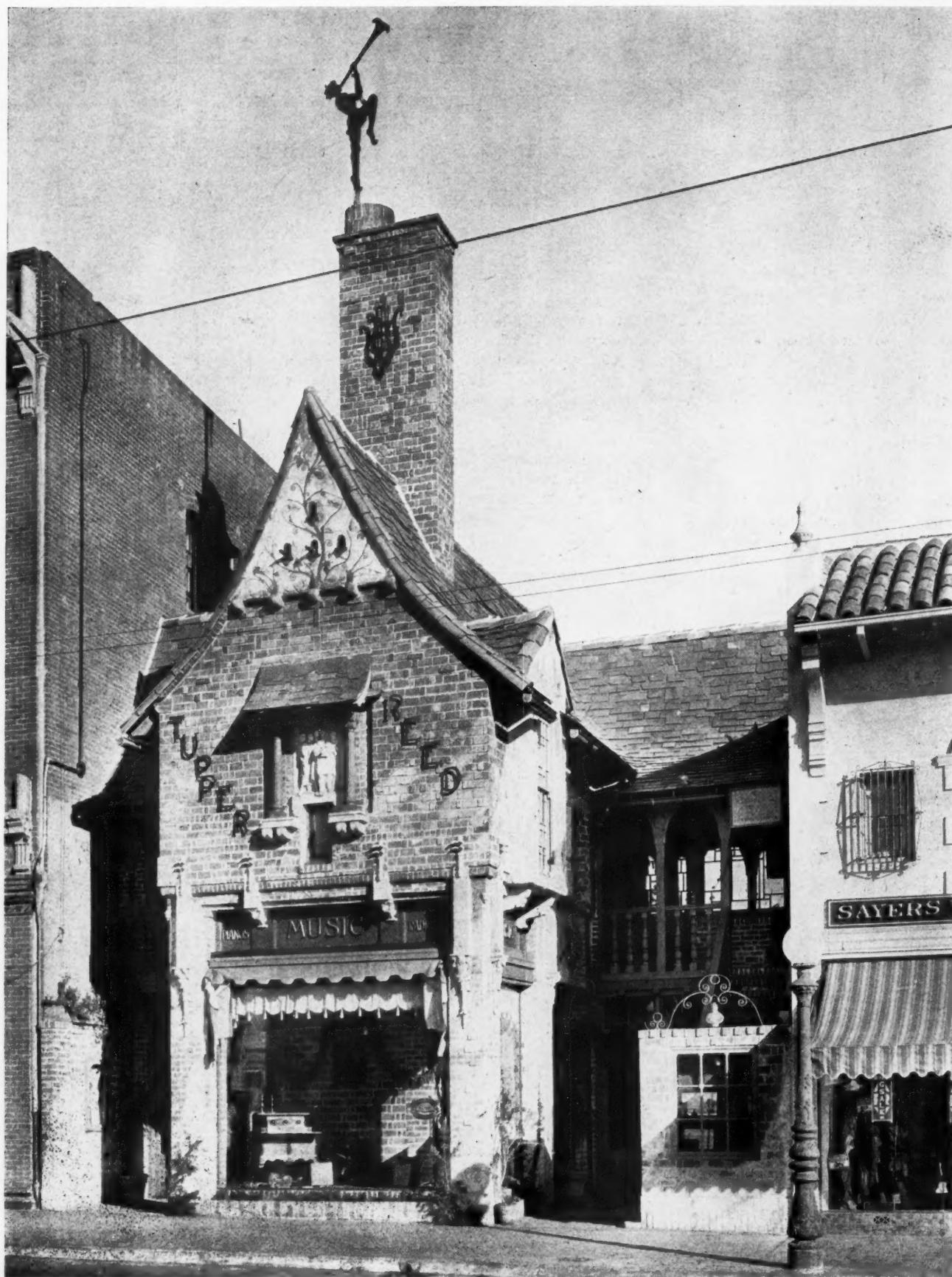
red brick which has been given the acid treatment. This with the use of paint and plaster gives a weathered effect to the exterior. The steep roof is of blue-gray English slate. A dove cote ensconced under the sharp gable and a bas-relief depicting the spirit of music and set in a niche of the building center front, each adds much to the beauty of the whole.

The great chimney 45 feet in height, with a life-sized piper balanced on its top, dominates the entire front. The single large show window occupying the center is set off further by tiled courts on either side through which one passes to gain entrance to the store.

Of the interior, a huge fireplace with raised brick hearth



The Main Floor of the Tupper & Reed Music Store Looking Toward the Rear Presents a Highly Attractive Appearance Quite Different from the Usual Aspect of a Store, but Entirely Practical in Its Arrangements for Carrying on the Business for Which It Was Designed.



As One Approaches the Tupper & Reed Music Store, in Berkeley, Cal., the Attention is Immediately Arrested and There Is an Almost Irresistible Desire to See Whether the Interior of this Fascinating Building Will Live Up to the Promise of the Novel Exterior Design, Nor Will He Be Disappointed for, as May Be Seen from the Illustration on the Preceding and Following Pages, the Artistic Old World Motif of the Exterior Design Is Fully Carried Out in the Design and Furnishing of the Interior.



At the Entrance End of Tupper & Reed's There Is a Great Brick Fireplace and the Furnishings and General Tone Are Much What One Would Expect to Find in a Fine Home.

takes up the space between the two front entrances into the reception room, the floor of which is of mission tiles in deep maroon shade. The music counter built along the north side of the room is also of weathered brick. The reception room is 40 by 60 feet, and is so arranged that it may also be used as a concert hall.

The plastered walls are tinted sand-rose, toning in perfectly with the maroon tiled floor and weathered brick of the interior chimney and fireplace, while the beamed ceiling and woodwork have been stained a brown black.

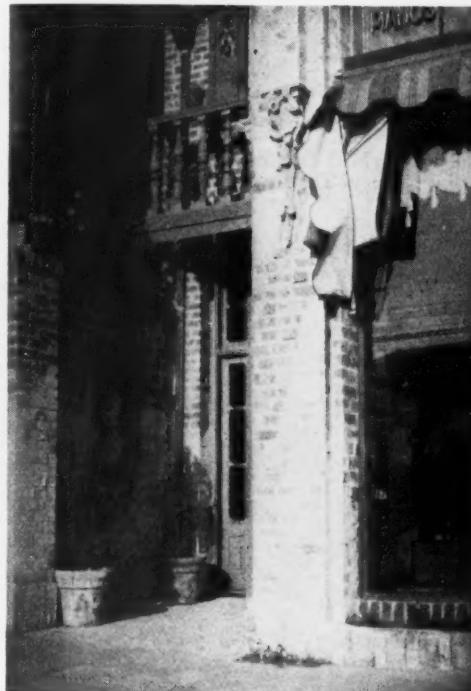
Two tiled steps lead up at the center, back of the reception room, to the long paneled hallway on either side of which are arranged the phonograph, record and piano display rooms.

From the reception room a quaint tiled stairway leads to the gallery and second floor. At the back is situated the radio demonstration room whose wide-opened casement windows overlook the entire reception room floor below. At the end of the gallery are the offices.

The lighting of the main part of the store comes from two superb chandeliers, designed especially to carry out the Old-World motif.

An outside stairway leads up to the overhanging balcony and gives entrance to the "Sign of the Piper" tea room that occupies the upper back wing of the building and preserves the general tone which characterizes the building.

There is nothing blatant in the beauty of this building, but instead one feels the beauty is that of restfulness in an atmosphere of pure art.



Entrances at Either Side of the Large Display Window Show a Multitude of Artistic Details and at the Right There Is an Outside Stair Leading to "The Sign of the Piper," a Tea Room on the Upper Floor.

It is not necessary to stress the fact that trade goes where is to be found what they want, put out in the most satisfactory manner. Add to this a harmonious setting of color and design and the ideal is attained.—

N. E. CALHOUN.



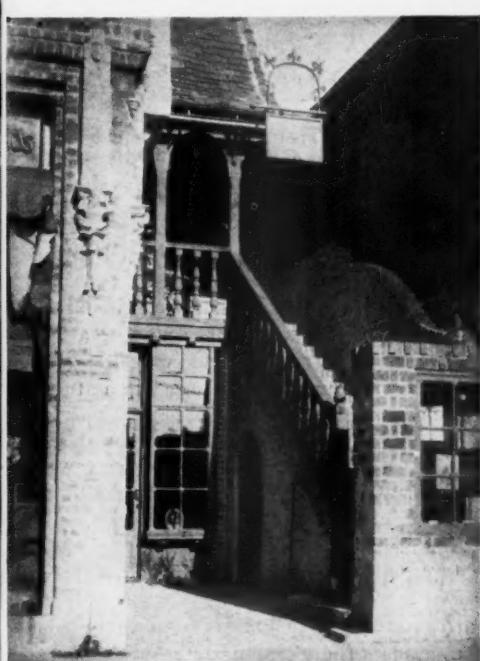
### Retail Stores Moving to Residential Districts

THE acute traffic congestion which the constantly increasing number of automobiles is causing in the retail districts of our large cities is automatically bringing about a process which may help to alleviate the situation, according to a bulletin issued recently by the Commerce Department, based upon the opinions of merchants who submitted their views on the subject.

This process is decentralization—that is, the establishment of shops of various kinds outside the congested areas. Merchants are more and more recognizing this tendency of shoppers to do their buying away from the districts where there is traffic congestion. In one large city two important department stores have already bought sites in a residential center for the location of branch stores.

These sub-centers in our largest cities now constitute a complete shopping district and differ from the downtown districts only in size and the number of establishments. It was reported recently that the retail advertising outside the main shopping district amounted to one-third of that done within it.

"Vehicular Traffic Congestion and Retail Business," published as Trade Information Bulletin No. 394, is a comprehensive study of the traffic problem and its effect on retail business. It may be obtained without cost from the Bureau of Foreign and Domestic Commerce, Washington, D. C., or any of its district offices.



# Unique Model Home Demonstrates Building Materials

**M**ODEL homes are being built in cities and towns all over the country, but probably nowhere has such a one been attempted as that which is illustrated here. It is a permanent model planned to demonstrate the building material handled by the Evansville Planing Mill Company, of Evansville, Ind. It is planned to afford prospective home builders an opportunity of inspecting in detail the various kinds and styles of building material in full sized construction, built in their proper places so as to avoid the disappointment which so often follows when the owner has specified wrong materials, due to his lack of technical knowledge, in selecting from written specifications and descriptions.

With this purpose in mind a house was constructed which is a composite of the materials handled by this company and actually contains examples of 90 per cent of the materials and appliances handled.



William Johann, Manager of the Evansville Planing Mill Company, Builders of the Unique House Pictured Here.

as concrete block, stucco, plaster, face brick and metal lath, are also displayed. The various kinds of brick, laid up in various patterns with the proper combinations of mortar color, are displayed in one of the inside walls of the living room.

Three different kinds of French doors are installed in this living room and used to conceal two types of disappearing beds handled by the company. In the brick wall panels various types of coal chutes and package receivers are also shown, while in the basement there is an automatic drain of a type which eliminates any possibility of water collecting in the basement under the worst conditions.

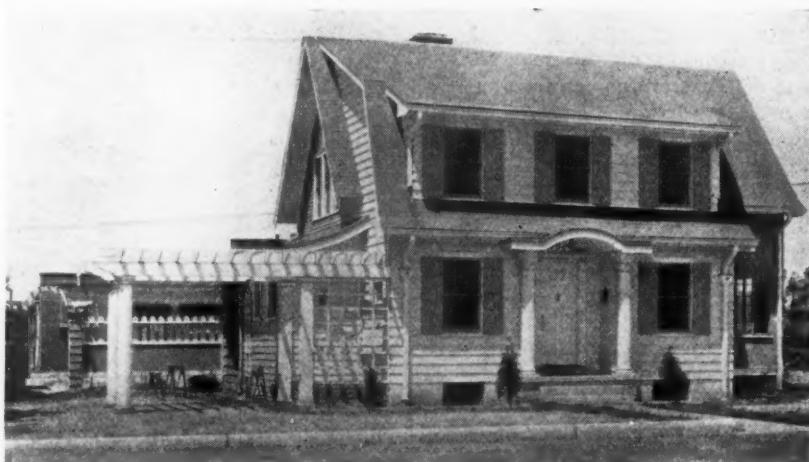
All of the different kinds of wood, both plain and figured, used in house construction are used here in all finishes and each is labeled as to kind and finish. In some places there are cut-away sections of various features to show the construction. Built-ins are



The Model House Built by the Evansville Planing Mill Company, of Evansville, Ind., Was Designed to Afford the Prospective Home Owner an Opportunity to See Every Type of Material and Equipment Installed as It Would Appear in Actual Use.

This is a full sized, ten-room house. Five different wall constructions are used in the basement walls and five different types of furnaces and heating plants are installed. The exterior displays four styles of architecture and four styles of exterior wall finish on its four sides. These are a stucco trimmed in white, a Dutch Colonial painted white and trimmed in light blue, an attractive bungalow style painted light gray with black trim and finally an English shingle effect painted silver gray, white trim.

Again, in the four sides of the roof there are four different styles of roofing material and this idea is carried out all through the construction. It includes 22 different styles and kinds of doors, 10 different kinds of flooring, 14 styles of casing and wood trim, six different grades of varnish and 14 different oil stains. Heavier materials, such



Another View of the Model House Shown Above Displaying Another of the Four Types of Exterior Finishes Used for the Four Outside Walls.

## Unique Model House

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featured, especially in the dining room, where china cabinets, window seats and buffets show the possibilities of this space-saving equipment.

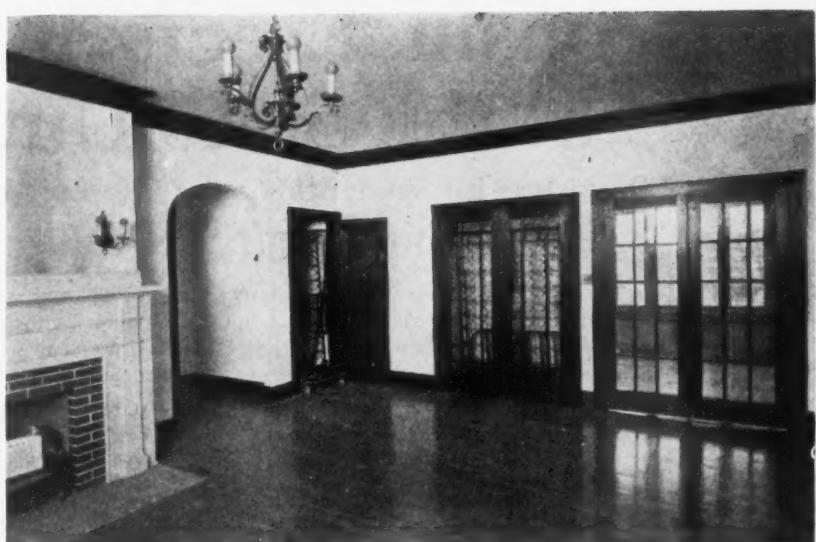
Specialties are to be found everywhere and include three separate bathrooms with three different grades of complete equipment, a ventilating system to carry off odors from the kitchen, two styles of kitchen cabinet, an infinite variety of lighting fixtures, steel casement and double sash windows and a number of different types of wood sash windows, a complete Colonial stairway leading from the living room to the second floor and disappearing stairs from the second floor to the attic.

On the outside there are square and round columns of both steel and cypress, grilles, pergolas and a lattice fence. The house is also equipped with a gas generating plant capable of supplying gas for all purposes to the suburban or country home outside the radius of the central gas company.

"In building this home," said William Johann, manager of the Evansville Planing Mill Company, "we had two main objects in mind. First, we wanted to interest as many people as possible in building more and better homes. That this was accomplished is shown by the fact that almost everyone in our city has visited the house and that hundreds of others for miles around have driven in to inspect it. The interest thus aroused has resulted in many questions concerning home building and has greatly increased business in both plans from our service department and materials from our yard.

"One of the direct results of this particular project was the development of such a demand for articles displayed in the house that we were compelled to add a new department handling nothing but specialties like weatherstrip, suburban gas and water plants, water softeners, and similar articles demonstrated. The demand for these specialties will continue, we believe, because they will remain on permanent display in the house.

"The structure becomes not only a model house in construction and arrangement, but also virtually a sales room in which we can keep on display samples of most of the merchandise we handle. It, therefore, served its first purpose by becoming the center of attention and interest in



Among Other Items the Living Room Displays Various Kinds of French Doors and Behind Them Disappearing Beds in Two Different Styles.

this community and will continue to remain a medium through which we feel sure more and more business will come to us in all departments of our company."



### Selecting a Building Level

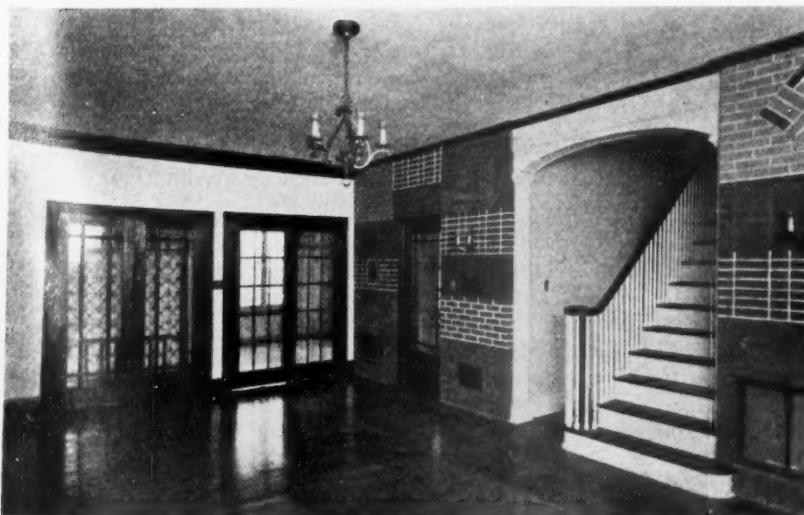
"THE trouble is, the average builder looks at everything from the point of original price," writes an executive of a firm making a well known line of instruments. "Contractors repeatedly tell us they cannot afford the proper instrument or that they already have an excess supply. In the latter case we usually find that the contractor has a number of instruments which are not at all suitable to his requirements, but are 'bargains' which he picked up from some engineer or other contractor.

"Obsolete model levels or even modern levels which are not designed for construction work are too expensive because they have a level vial too sensitive for ordinary construction purposes with the result that much time is wasted and annoyance is suffered because slight variations around the construction area cause the bubble to move. While slight movement of this highly sensitive bubble, for the distance on the job, does not represent sufficient change in the horizontal line of sight to require resetting

of the level, at the same time the average foreman is uncertain whether this is the condition for his instrument or whether it is really out of adjustment and needs to be reset.

"Another thing about the engineers' level is that very fine cross wires are used in it because the engineer reads very long distances out in the open and the heavier wire desired by the contractor seems to intercept too big a space on the engineers' rod at his long distances. On the other hand heavy wires in the telescope are needed on building construction as they can be easily seen.

"It is not good business to use one instrument for all purposes but the contractor should have an instrument especially designed for the particular class of work. If the contractor would write to a reliable maker of transits and levels and tell him the purpose for which he needs an instrument, the latter would give him advice on the proper degree of sensitiveness of the level bubble required for the purpose."



Another View of the Living Room Showing the Demonstration of All Kinds of Brick, Bonds and Appropriate Mortar Joints and Also Such Accessories as Coal Chutes and Package Receivers.

# Wisconsin Erects Fine Memorial at the State University

Headquarters for Students' Social Life Erected in Honor of War Dead

By BERNARD L. JOHNSON, Editor, American Builder

**O**F the several excellent perspectives in this issue, the design by Arthur Peabody, state architect, for the Wisconsin Memorial at Wisconsin University, Madison, has unusual interest.

A memorial building is usually an inspiration to the architect and our readers will agree that Mr. Peabody has not failed to do full justice to his opportunity.

### The Paul Brown Building, St. Louis, Missouri

Preston J. Bradshaw, Architect

Brussel and Viterbo, Engineers

Albert Mouschim, General Contractor

In designing this building the architects have on the exterior employed a type of architecture suitable to a modern office building situated on so conspicuous a site. The lower two stories and the top story are faced with a matt surface, light terra cotta, with intermediate floors faced with a light gray brick. All detail and design is carried out in a modern Romanesque architecture, which adapts itself readily to a wide facade with extremely large window openings for offices.

The typical floors above the ground floor each contain 15,000 square feet of net rentable area, to be divided into offices as desired. The office floors will be served by eight high-speed electric elevators of a most modern type, entrance to which is obtained on the ground floor through a magnificent lobby, finished with marble floor and wainscoting and with an ornamental plaster frieze, cornice and ceiling. Elevator doors are of solid bronze panels with bronze trim. The estimated cost of the building is \$4,500,000.

### Wisconsin Memorial Union at the University of Wisconsin, Madison

Arthur Peabody, Architect

The Memorial Union, commons and theater building for the University of Wisconsin, the design for which is illustrated in this number, is for the social life of the students of the university.

This project was conceived shortly after the close of the world war as a memorial to the soldiers and sailors who served in that great struggle. The building is located on the lower campus of the university, and is one of eight important buildings proposed for the final development of this part of the university grounds. The rear of the building faces on Lake Mendota. The ground here will be formed into terraces leading down to the lake, providing spaces where the public will gather to view the spectacle of the Venetian Nights and other similar functions.

The design of the building follows the Italian Renaissance in the type of architectural treatment shown in the great villas of the Roman Campagna.

It will be of cut stone, employing a gray stone for principal parts and a delicate buff for subordinate wall surfaces. The roof will be of green tile. Such ornamentation of marble and mosaic usually employed in buildings of this class will be found on the interior together with mural paintings, tapestries and other decorative materials. The construction will be fireproof throughout. The principal elements of the building are the memorial or trophy room, reading and social rooms, the lounge, billiard and game

rooms and the large banquet and dancing hall in the upper story. Offices and other rooms for various student organizations are provided as well as spaces for alumni headquarters.

In the commons pavilion to the right are the dining rooms, guest rooms and dormitories for athletic teams. Kitchens, etc., are in the basement.

The theater pavilion on the left is for the use of the various dramatic societies of the university, for their performances. It will be used also for lectures, convocations, and other similar purposes. The estimated cost of the building and furnishings complete is \$1,300,000. Construction work is now under way.

### Barclay Vesey Building, New York City

McKenzie, Voorhees & Gmelin, Architects

Post and McCord, Inc., Engineers

In the design of this great new telephone building, acreage has been pyramided to its maximum economical point of space multiplication. The building indeed carries something in its outline suggestive of the great pyramids of Egypt, and is approximately the same height as the largest pyramid.

The outside of the building is of light buff, rough brick finish, and the sills, lintels and decorative arches and panels are all limestone. On the ground floor is a beautiful corridor of marble and an arcade 17 feet wide which runs the entire length of the Vesey Street side and marks a new departure in big building construction.

During the work of excavation many relics were found. These included an old boat, a section of a wooden water main, cedar logs, coin and the skull of a ram. According to a Columbia University geologist the cedar logs indicated that the building site had once been a cedar forest.

Steel construction begins 72 feet below ground and rises 498 feet above the sidewalk. Twenty thousand tons of steel were used; 5,000 tons of this being below ground level. The total gross area of the building is 28 acres. There are 31 floors above ground and five floors below street level; each of the first 10 floors covering an acre. The usable floor space is 857,709 square feet, sufficient to accommodate 6,000 workers and six complete central offices capable of serving 120,000 telephones.

### Hawthorne Hotel, Salem, Massachusetts

H. L. Stevens & Co., New York City, Architects & Builders

Just three miles from Swampscott, where President Coolidge spends his summer vacations, stands this fine resort hotel. It is an \$850,000 structure, of six stories, 150 guest rooms, and the usual, and some unusual, public space. Named for the famous novelist, the hotel furnished in Colonial style, abounds in historic suggestions. The Hawthorne room is furnished with genuine relics, and the wall paper is made in imitation of the paper in the old House of Seven Gables.

An unusual feature is the Marine room on the roof, for the occupancy of the Marine Society of Salem. It is fitted up to resemble a ship's cabin and has a wonderful view of the ocean and city of Salem. The building of this hotel was financed by local business men through a financing campaign by the Hockenbury System, Inc.

# ART SUPPLEMENT *of* NOTABLE ARCHITECTURE

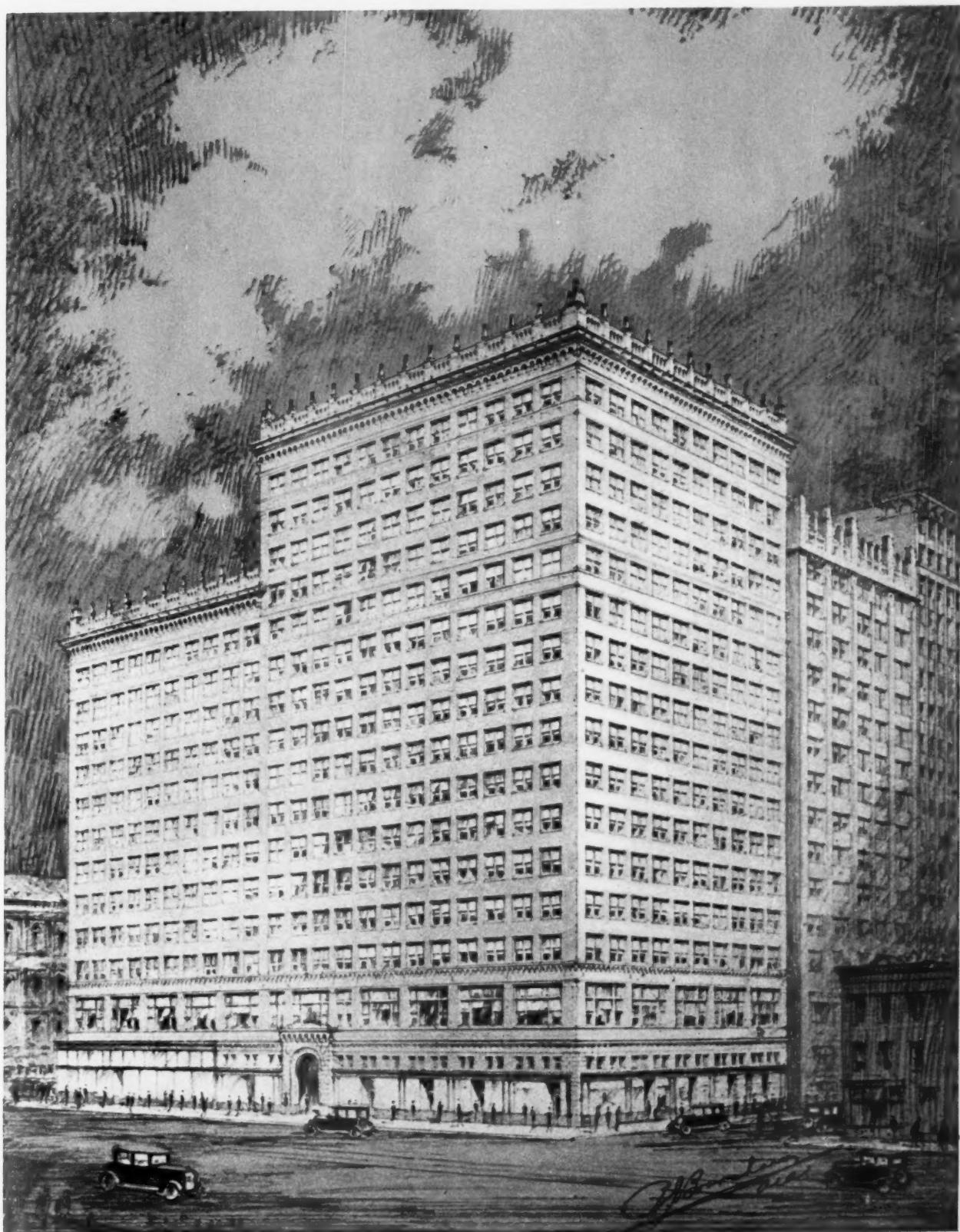


PLATE 85

*The PAUL BROWN BUILDING, St. Louis, Mo.; Preston J. Bradshaw,  
of St. Louis, Architect.*

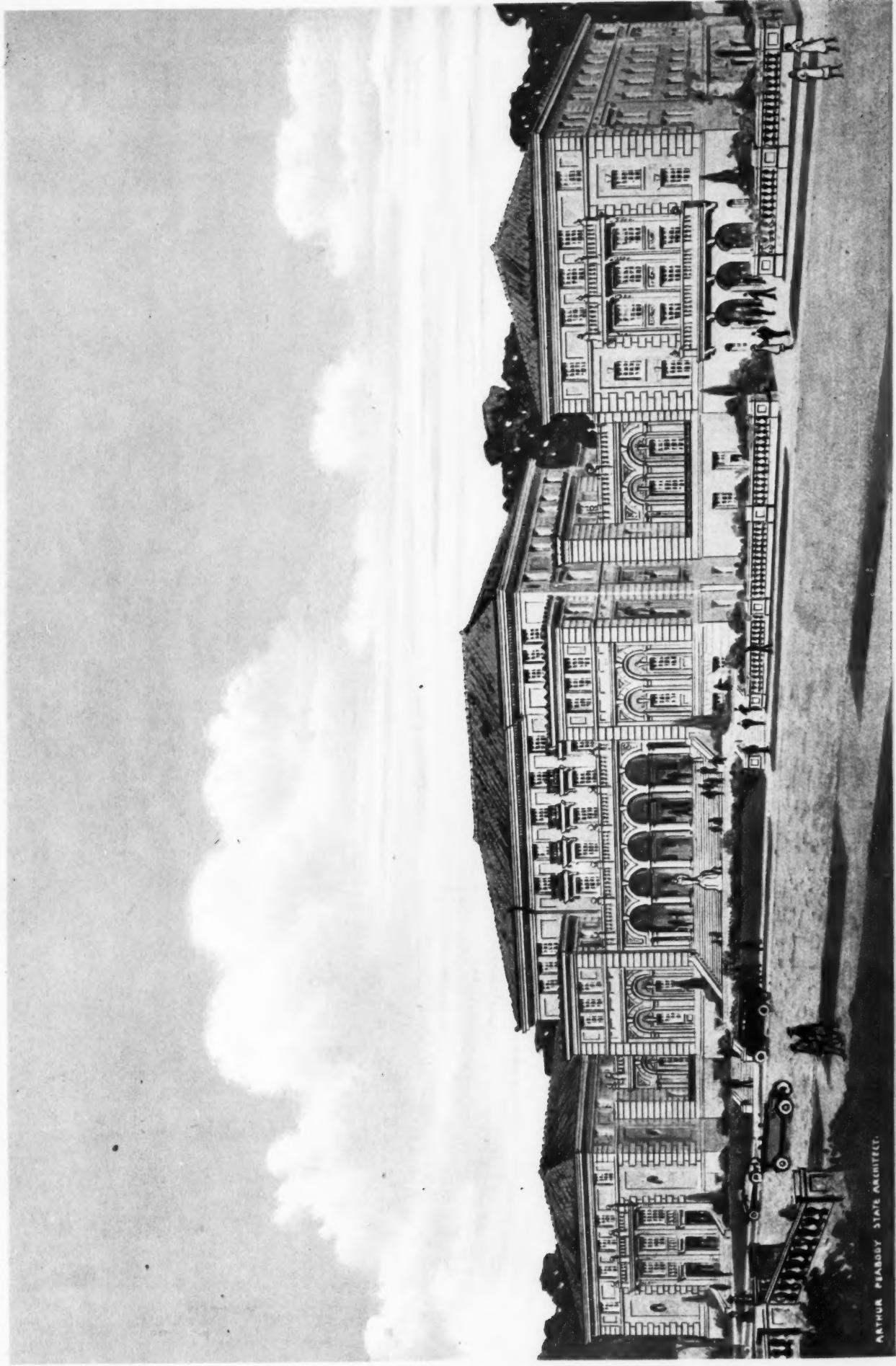


PLATE 86

*The Wisconsin Memorial Union at the University of Wisconsin, Madison;*  
Arthur Peabody, State Architect.

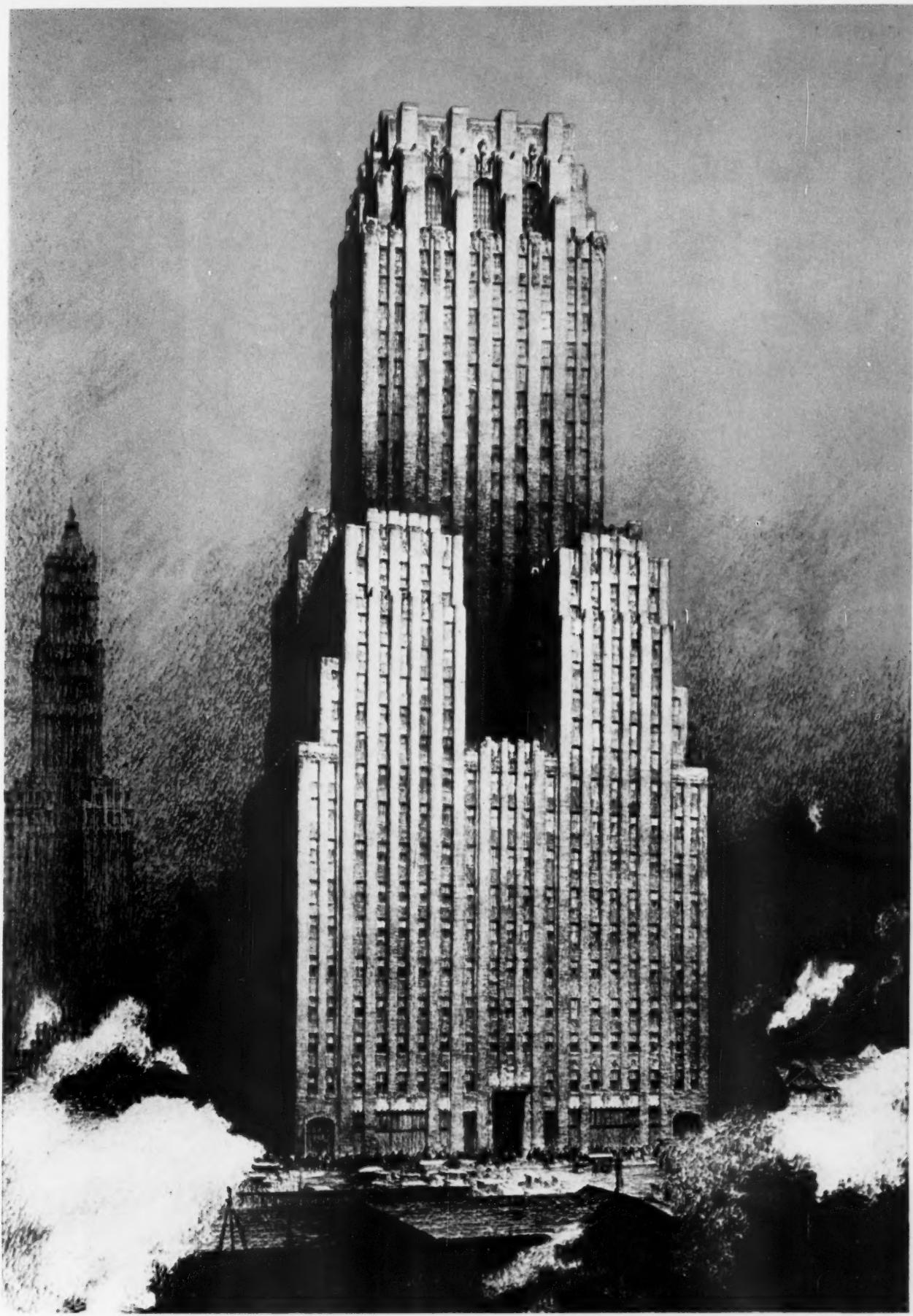


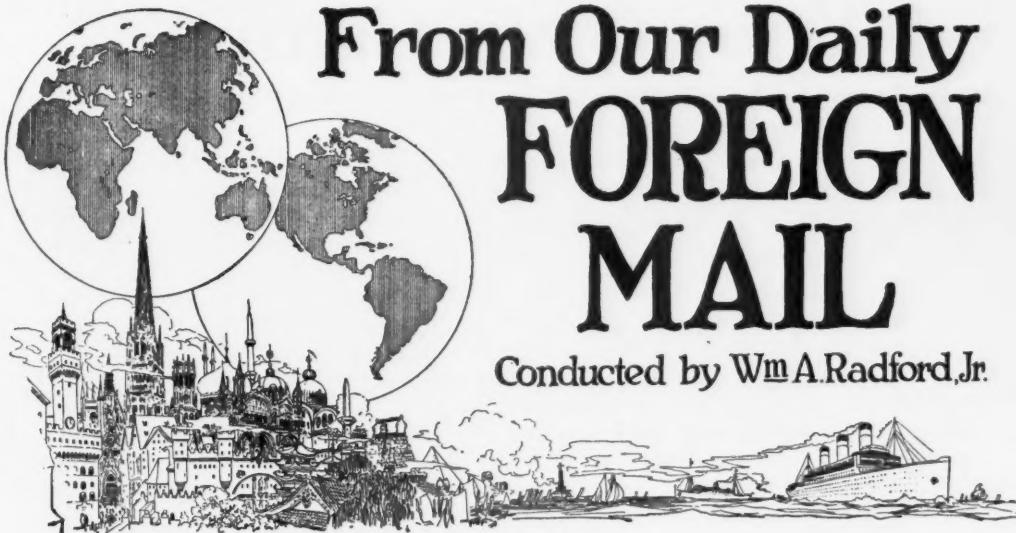
PLATE 87

*The BARCLAY-VESEY BUILDING of the New York Telephone Company, New York City,  
McKenzie, Voorhees & Gmelin, of New York, Architects.*



PLATE 88

*The Hawthorne Hotel, Salem, Mass.; H. L. Stevens Co., of New York, Architects;  
to be operated by the American Hotels Corp.*



# From Our Daily FOREIGN MAIL

Conducted by Wm A Radford, Jr.



William A. Radford, Jr., Vice-President of the Radford Publications, in a two-year investigation, has personally visited forty-nine foreign countries in the interest of the American Builder and World Trade for our advertisers.

## Home Building in Siam by a Student of the American Builder

January 12, 1926.

The Editor of AMERICAN BUILDER,  
Chicago, Illinois.

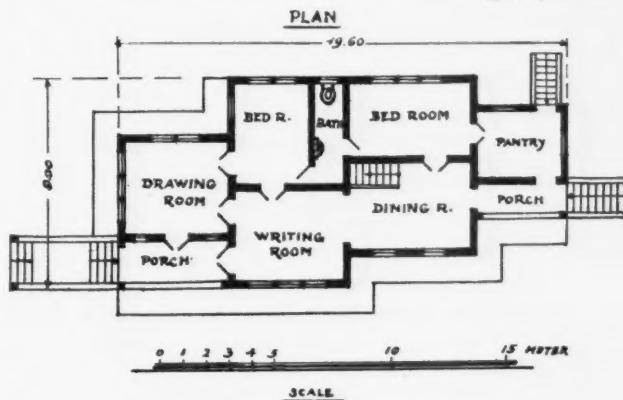
Dear Sir:—I don't know how I can ever thank you and all the good ideas in the AMERICAN BUILDER magazine. Since I have been your subscriber for two years I am more improved and better on my construction work. Of course, you will be surprised if you see what I have done last year. I can tell you without keeping any secret that I have built many houses in the year of 1925, and at this presence I am on the work of a cinema hall for His Excellency Phya Deves, Bangkok, Siam.

In the best way of thanking which I selected in sending you the plan and photos of a house that I have built for Phya Rambandhit in Bangkok, its cost \$6,600, it would be

very much pleased to me if you will publish them in your magazine next issue.

Very truly yours,

KHUN BURAKAM,  
Technical Section of the Dept. of Public Health,  
Bangkok, Siam.



Well Constructed Six-Room Bungalow Built in Bangkok, Siam, by a Native Reader of the American Builder.

*Note: For the benefit of our advertisers we will, without charge, translate any foreign language letters referred to us.*

AMERICAN BUILDER.

# Build Your Own Camp

## How 800,000 Boy Scouts Are Building Their Own Troop Cabins

HERE comes a time in the life of every boy when he gets his gang together and builds a shack of one kind or another. A shack that belongs to the club, made perhaps of boxes, of scrap lumber "borrowed" from a house just under construction, or perhaps he has access to the wood yard of a farmer and a more pretentious building of logs is made. But still the shack is built without plan, without much forethought—a patch here and a patch there until it is completed.

The Boy Scout movement is solving this gang problem by erecting troop cabins and lean-tos under the direction of a leader with definite plans as to how it is to be accomplished. As a result the finished product is made along true building lines and the shack is something of practical value to the troop.

Boys who want to win a merit badge for Pioneering must build a shack of one kind or another, suitable for three occupants. The customary form of shack they select is a lean-to with thatched roof. This type was so stereotyped among the campers at Camp Washington, Yorktown, Va., that the leaders felt something had to be done to arouse the interest of the boys along real constructive lines. So this year they gave the pioneers the plans of an Adirondack shack and under a capable leader the Scouts fell to work, and it was constructed near the camp headquarters.

The Adirondack shack is of open front design and made entirely of logs, so the first big job was the cutting of the trees. The trees selected were of uniform size—as near as possible—and were only cut where thinning was necessary. Proper training in the handling of an axe was given the boys during the work of getting the logs ready for notching.

After enough logs were prepared the actual construction work was begun and further instruction was given in the use of the axe and notching of the logs. Then carefully the logs were laid and trimmed up and as each log was put in place the pride of the boys increased. They were actually seeing a real shack develop according to a pre-arranged plan and their pride increased with each bit of effort used to put a log in place.

The work continued and the peak of the roof was reached—the shack was finished with the exception of covering the roof and the question arose as to what should go on the roof. The boys were allowed to offer suggestions and everything from pine needles to tin was mentioned. At last the suggestion that the leader was looking for came—shingles. Shingles from the mill were expensive, so they decided to make their own.

After scouring the country for miles, the boys found an old colored man who still had in his possession a tool known as a shingle froe, and with a little persuasion it was secured for use. The froe is a simple tool made of iron about three inches wide and eight inches long, with a blade that can be forced into the lumber by striking the back a sharp blow. The handle to the froe is placed at right angles to the blade, so a greater leverage can be secured in riving off the shingles.

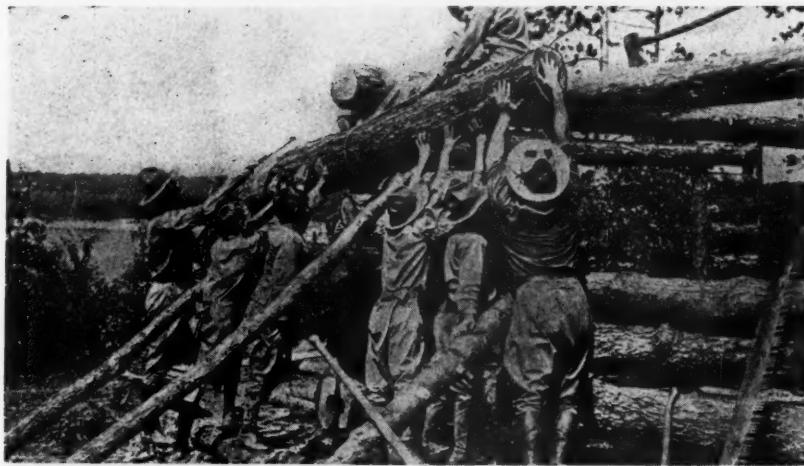
The froe secured, the next question was as to the kind of wood available to make shingles. The boys delved into nature books and soon had a list of woods that split easily. Red cedar was the first choice, but it was soon discovered that numerous knots made the splitting mighty hard. Then a straight grained pine—seasoned—was tried,



When Properly Built the Log House Is Remarkably Warm and Comfortable Even Under the Most Severe Weather Conditions and for the Camp or Summer Home Nothing Fits So Appropriately Into a Setting of Woods and Waters.

## Build Your Own Camp

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**A Few Skids, the Slanting Poles, and a Rope Are Used for Heaving the Logs Into Place After Being Notched on the Ground.**

and although this split rather easily, it was too springy, so that too was abandoned.

While on a trip through the woods the boys discovered a dead chestnut tree, about eighteen inches in diameter. They felled it and cut it up into proper lengths for shingles. Within two days the shack was completed. Every bit of work had been done by the Scouts.

They built a reflector fireplace of logs, with a rustic crane for suspending pots over the flame. These last touches made the job complete, and the boys proudly said, "There wasn't a nail in it except to hold the shingles on."

The shack became a rendezvous for the parents visiting the camp. The boys when they left carried away with them new ideas as to shack building. They also carried away with them the pride any normal person feels in doing a job and doing it well. It also proved to the adults that a gang directed is of far more use than the gang undirected, and the shack stands as a monument to this particular group of boys.

Tiny willow bridges, running mountain streams and little wooden houses are faithfully reproduced in a miniature camp and mountain scene worked out by two nimble fingered scouts of Oakland, Calif. The camp scene has created so much comment that the Oakland Chamber of Commerce is planning to preserve it. Infinite pains went into the making of the miniature scenes. The terrain is arranged with real earth, grass and rocks; the tiny bridges are constructed minutely by hand, the houses, tents and



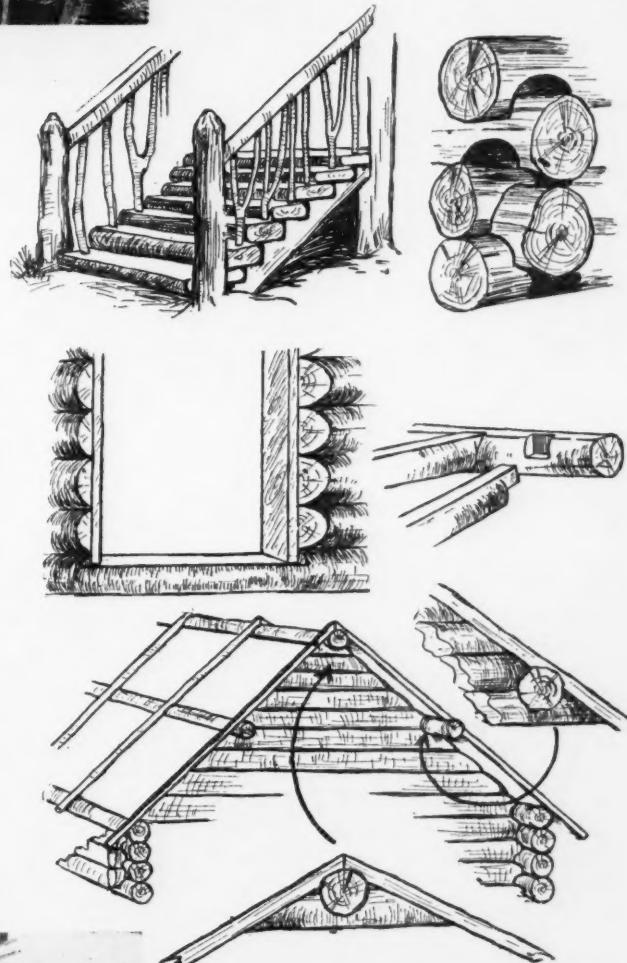
**Scout Troop 27, of Sacramento, California, Building a Log House as a Part of the Better Homes Celebration. This troop also built a primitive grass hut and an Indian tepee, showing the evolution of the home.**

camp buildings put together painstakingly, piece by piece.

The Department of Camping has published a pamphlet to help scout troops build shelters and cabins for hikes and permanent camps. It is intended to be suggestive rather than exhaustive.

Contractors and Builders—cement work a specialty, buildings of any design of the lowest possible cost, by experienced workers.

Boy Scouts of the town of Hudson, N. Y., can hang out the above shingle and back it up, because they can offer as a specimen of their work the new local scout headquarters building, built by their own



**Details of Log House Construction, Notching of Logs, Stair Treads, Door and Window Framing, Fitting of Joists and Rafters.**

hands; a new cement building, valued at \$23,000, distinguished as a fine bit of architecture as well as a monument to boy initiative and industry.

It contains a large reading room. There is a huge fireplace decorated with trophies the boys have collected, and here too the scouts have their library and their talking machine. Adjoining the reading room are the reception room and offices and a game room in which stands a handsome billiard table, gift of a local business man. At the back of the building is the gymnasium, the only one in town. Around the upper part is the race track, which can easily

be converted into a balcony for games and exhibitions. At one end of the gymnasium is a removable stage.

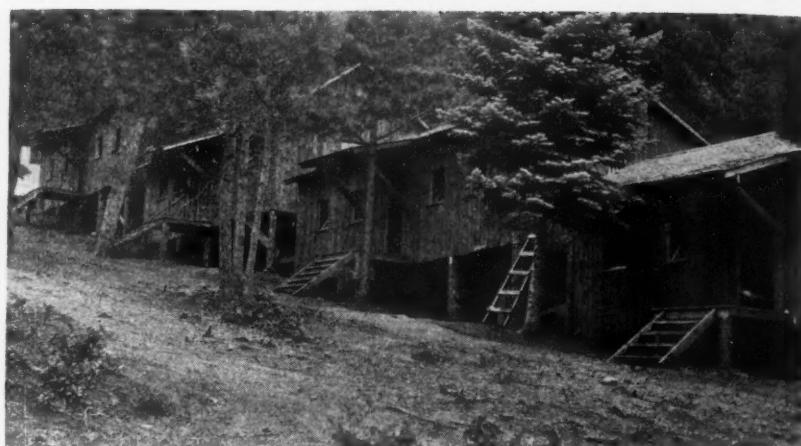
The front basement is occupied by a large checkroom, storeroom for camp and other scout needs, general storeroom, kitchen, two locker rooms and a shower bath. The rear of the basement will eventually be converted into a boiler room.

In addition to the work done on the building the scouts have built a retaining wall at the edge of their lot. The wall has been wired for electric lights so that outdoor exhibits of sports may be given at night. In the center of the lot are a large swimming pool and a diving board, which any boy in Hudson is welcome to use. The scouts are designing a water chute, and intend to build a roof garden as the next step of development of their headquarters.

Constructing a bungalow on its camp site was one activity of Troop 153, Brooklyn, on its recent two weeks' outing at Lake Owassa, N. J. Here the troop owns two acres, and the new structure just completed will be used as a permanent camp. All the scouts had instruction and practice in carpentering, and during the building they had to read a blue print and work from it with rule, square, plumb and level. During the morning, everybody worked clearing off a section of the land for a baseball field. Though on retiring the boys usually yelled for a story, every tired scout was asleep before the scoutmaster finished telling his tale.

A log cabin built without cutting a tree or spending a dollar tells of the ingenuity and thrift of Troop 1, Dallas, Texas. The scout policy of tree conservation was strictly adhered to. A pile of short left-overs from the clearing of the camp lake site was given to the builders who supplemented this material with posts and short logs found in the forest land nearby, which belongs to the main scout camp site.

The fireplace and one end wall were built of native limestone, and the floor of flagstones, hauled in the scoutmaster's flivver from a creek bed a mile or so away. The door and roof planking were made from refuse lumber salvaged from old concrete forms. The hinges on the doors were forged from bar iron in the troop blacksmith shop. The only "store bought" items in the cabin were the cement for the chimney and the felt roofing, and both of these were donated by friends.



Scout Sleeping Cabins at Camp Burch, Pueblo, Colorado. Each is 16 by 30 feet and accommodates eight to ten boys with a window for each boy, assuring ample ventilation.

The cabin is eighteen feet long by twelve feet wide inside with "A" type roof, stone floor, two windows and three doors. The door and window frames are made of rough pine, stained brown. The fireplace is large enough to hold five-foot logs. It was designed by one of the boys and is fitted with a concrete hearthstone and a large cedar log for a mantel.

The furnishings are in true pioneer style. Tables and shelves are provided for cooking utensils and supplies. At night, boys sleep on the floor, on bed sacks, which are stored on the long rafters during the day. Cooking is done on a gridiron set on stones in the fireplace. A spit and crane are being made in the troop work shop. The main construction period extended over about six months' time, but the boys have been continuing for the last year to put on additional touches.

In Pelham, N. Y., the scouts helped complete a new cabin. The boys gathered the rock for foundation, fireplace and chimney, dug the foundation, hauled the logs, laid the floor and roofing, calked the crevices with oakum and otherwise assisted the builders who did the main construction work. The cabin is 40 feet by 22 feet inside. The fireplace has two hearthstones from Anne Hutchison's hut near Spit Rock, bearing the legend, "Hutchison 1642." The cabin will serve as a general headquarters for the Pelham scouts, a community meeting place and a week-end camp site.



### Electrifying the Modern Home

**I**N one home out of every five, in America, the vacuum cleaner has taken the place of the broom and in one home out of every eight the electrical washing machine has replaced the old methods of washing, according to Arthur Williams, vice-president of commercial relations of the New York Edison Company, describing the results of a survey of the use of electrical appliances in homes. The fact that approximately 5,000,000 vacuum cleaners and 3,500,000 electrical washing machines are now in use in the 26,000,000 homes of America, is distinct evidence of the remarkable progress which is being made in the complete electrification of the modern American home.



Toledo Council Boy Scouts Troop 23 Camp, an Attractive Example of the Rustic Log Home with Fireplace Chimney of Native Boulders.

# A Truly Small Home Offers Quality at Low Cost

HARRY LUCHT and H. G. ANDERSON, Architects



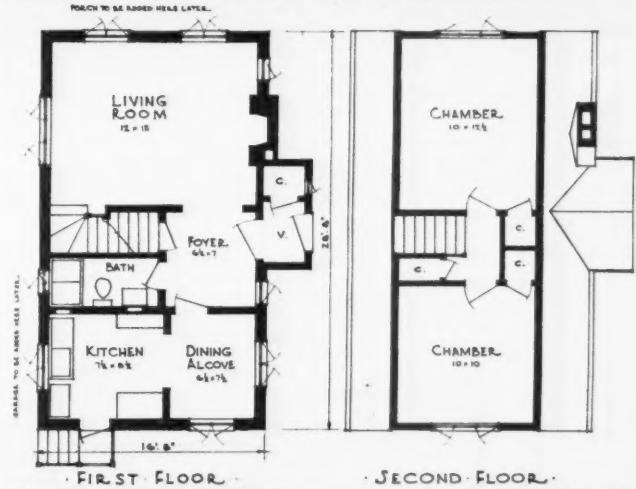
Within Sight of Times Square, New York City, but in a Setting of Rustic Beauty on The Palisades, This Tiny Home Is a Model of Quality Construction and Living Comfort and Was Built at a Most Moderate Cost.

MANY competitions are being held and designs published and distributed of so-called small houses, suitable for the average small family which is planning to build a home of its own. While many of these plans are good and fit well the purpose for which they are intended, on thorough investigation many others reveal dimensions which are by no means small in the present day sense of the term.

These houses cannot be built on the average small lot now available to small home builders, due to the increased cost of land in the vicinity of large cities where the income-earner must locate within convenient travel distance from his work. Also, these jobs actually prove to cost more to build than the estimated figures, due to extras, local conditions, and so forth.

The house pictured here has actually been built by H. G. Anderson at Fort Lee, N. J., from the plans shown. His idea was to build small but of the best materials, free from upkeep and repair costs in the future. Here, then, is a really small, complete home, the outside dimensions being only 16 feet 8 inches by 20 feet 8 inches and the form most simple. Anyone, whether he be an architect or contractor or a layman, can appreciate these points in relation to the cost of construction. This building can be built on any lot, no matter how small.

Freedom from upkeep and repair costs is assured by the heavy architectural slate roof, copper gutters and leaders, hard burned brick walls, copper steel casement sash, hot water heating and all plastering on metal lath and direct to the walls, hardwood floors, tiled bath, stone concrete cellar, metal frame copper screens and every other feature of equal quality.

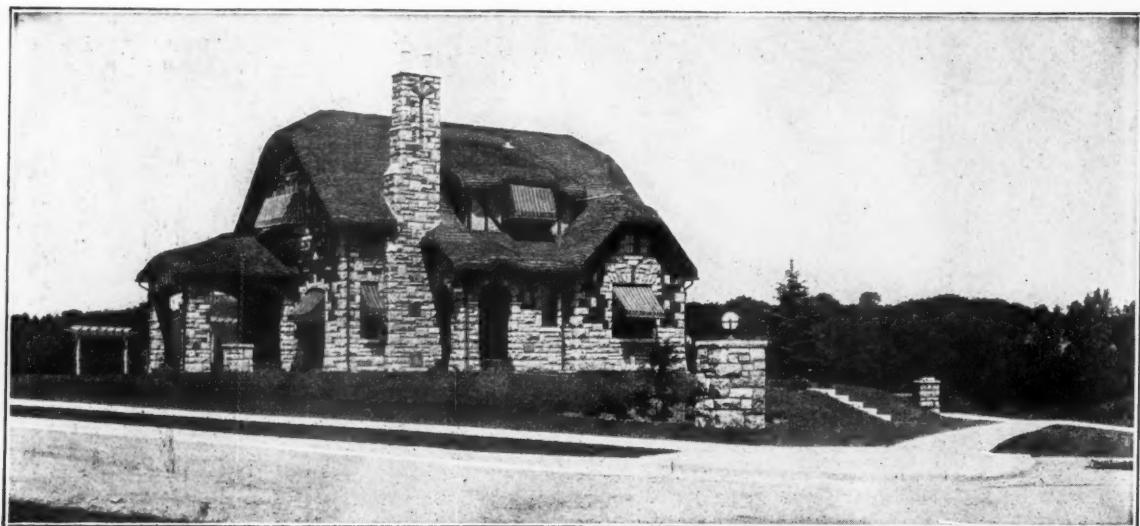


FIRST FLOOR.      SECOND FLOOR.  
The Floor Plan Is Simple but Compact and Provides for Ample Comfort and Possible Future Expansion.

This house cost, completely equipped, \$6,000, a price of truly popular appeal. With ordinary construction employed on the houses usually offered for sale, it could be built for \$4,000.

In the house as built, provision is made for the addition of an attached one-car garage at the rear of the house and an enclosed porch at one side, at any time when the owner feels that he can afford these extras. It is also interesting to note that while Mr. Anderson's home is located in a highly rustic setting of woods, it is within actual sight of Times Square, New York City, being built on the Palisades overlooking New York City.

# A Modern Home Designed from An Old English Residence



**A Model Home of Distinctive Design Built by John G. Kuehnle, of Dubuque, Iowa, to Offer Suggestions for the Builders of Homes Through Its Demonstration of the Most Advanced Achievements in Home Building Design and Materials.**

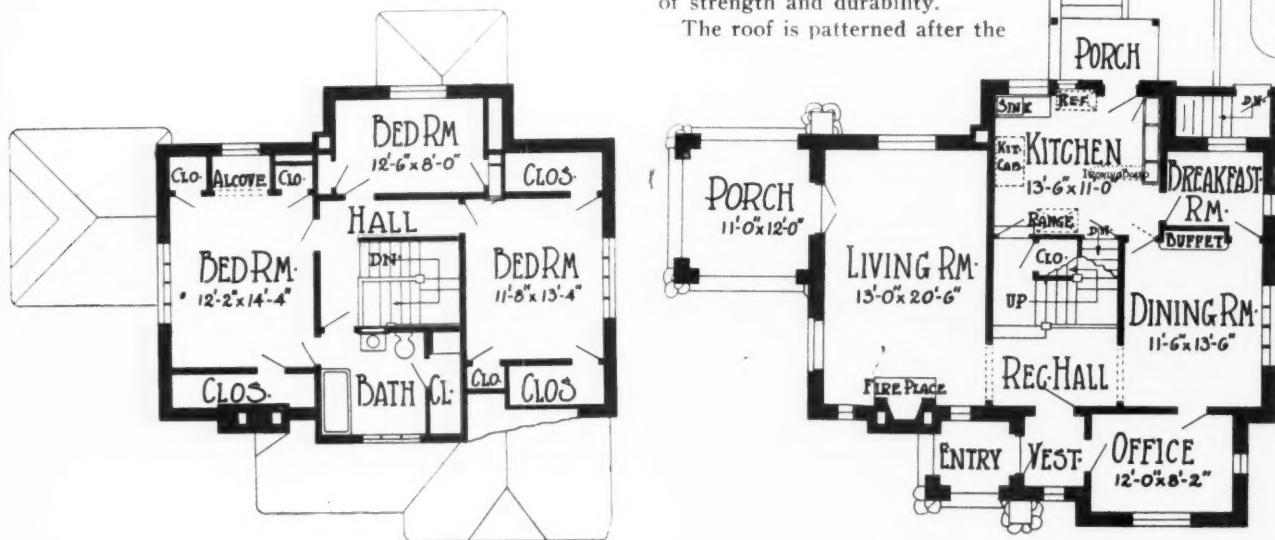
IT was to visualize the most advanced achievements in home building that John G. Kuehnle, of Dubuque, Iowa, undertook to build his model home. It presents ideas for all who are interested in the improvement of building methods.

In determining the location of this house a commanding south and east corner was selected with a frontage of 159 feet on each of the two streets and presenting unusual opportunities for landscape treatment. Close attention was given to the elevation and grade, placement of the buildings and planting scheme with the purpose of bringing out the proper relation of the entrance and the living and service portions of the grounds. A 50-foot setback from one street and a 100-foot from the other gives a separation of 200 feet from neighboring houses on both sides and a withdrawn air entirely in keeping with the style.

Exterior design, plan and arrangement and materials to be used were the next consideration to which Mr. Kuehnle gave the experience gained through many years of home building in Dubuque. The architecture was copied from an original photograph taken at Wolver Hampton, England, and through the skill of the architect, J. F. Leitha, all dimensions taken from the photograph were reduced to a miniature size and copied stone for stone and brick for brick.

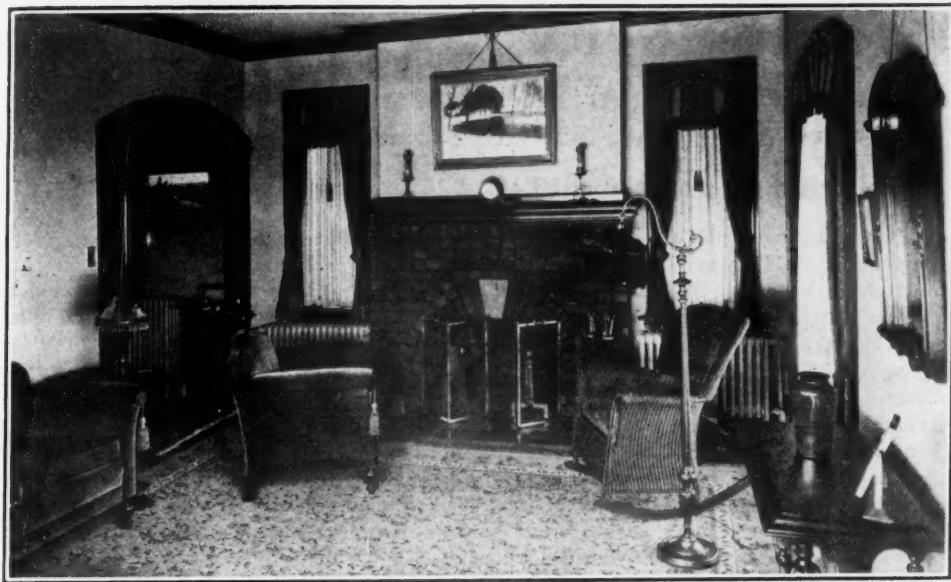
The walls of the house are of stone and brick, the body stone being taken from local quarries and the trimming of Bedford stone and beautifully colored and textured brick. These two materials are blended in perfect harmony and with an effect of strength and durability.

The roof is patterned after the



Complete in Every Detail Is a Well Deserved Description of This House Plan in Which No Single Point Has Been Slighted.

An Office on the First Floor Might Also Be Designated as a Study or Library as Best Fitted the Needs of the Home Owner and His Family.



The Living Room, with Walls Finished in a Blend of Soft Tan, Brown and Lavender, Is Furnished with Oriental Rugs, Hand Hammered Bronze Light Fixtures and Every Detail Perfect.

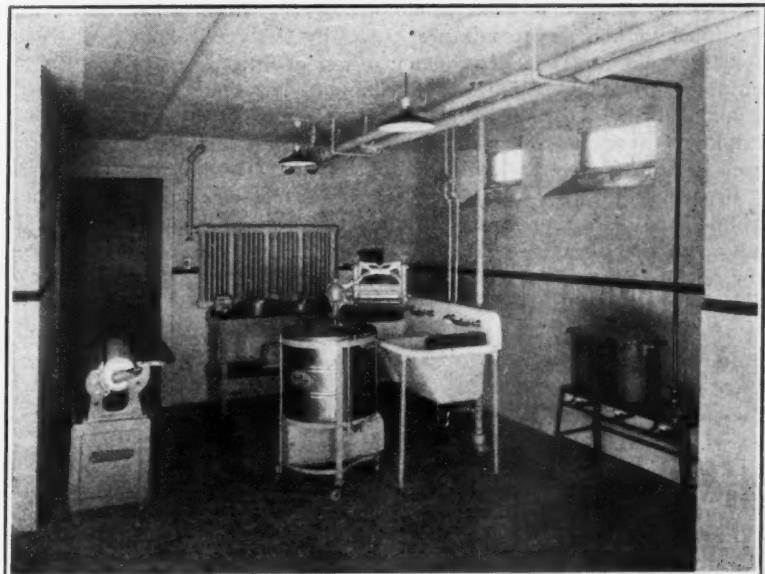
old thatched straw roofs of England, all sharp corners and angles being softened and flowing into gentle curves. It is of stained shingles of a weathered straw color.

Quality materials and construction have been used throughout this house as shown by such features as steel casements finished in baked enamel; selected white pine exterior trim; 24-inch rock basement walls resting on concrete footings 1 foot thick and 3 feet wide; basement partitions of hard burnt tile; 2 by 12 first and second floor joists and 2 by 6 ceiling joists; complete insulation formed by a wall construction consisting of a facing of stone or brick, an air space, a course of hollow tile, furring, insulating board and plaster, making a 14-inch wall; weatherstripped and insulated window and door openings; quarter sawed flooring over pine sub-flooring and deadening felt.

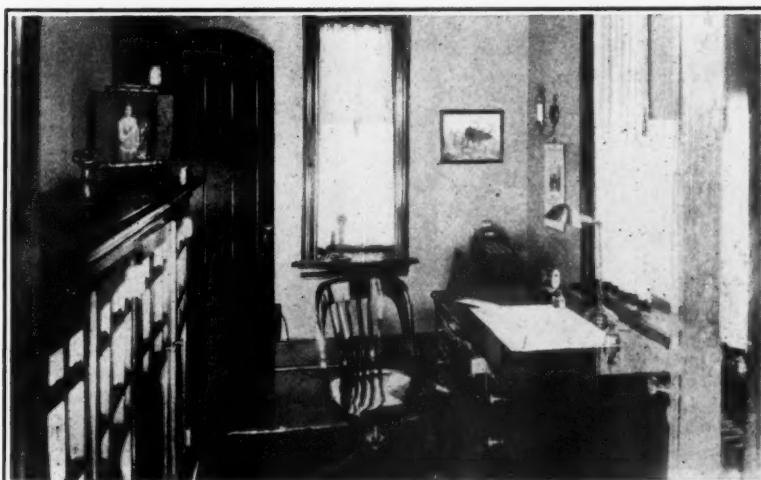
One enters the reception hall through a vestibule off which is a small office which may also be reached from the dining room and affords a secluded retreat for whatever member of the

family may wish to work undisturbed.

The stairway ascends directly from the reception hall and at either side are arched doorways leading to the dining room and living room. The latter extends across one entire side of the house. There is a great brick fireplace at one end while near the other end there are doors giving access from the porch. Adjoining the dining room is a cozy breakfast room with entrance from both dining room and kitchen. The kitchen is placed at the center rear, directly back of the reception hall, and is fully equipped with every modern convenience designed to lighten the daily duties of the housekeeper.



A Basement Laundry May Be Really Attractive When Finished in Neat Clean Style and Equipped with All the Modern Labor Saving Appliances.



A Secluded Office, Study or Library Appeals Most Strongly to the Man of the House, Offering a Place for Undisturbed Work.

Above stairs there are two large bedrooms, one smaller bedroom and the bathroom. Each of the large bedrooms should be a joy to the lady of the household, having three closets, while the small room has two smaller closets and there is also a large closet in the bathroom. The basement has not been overlooked in the completeness of finishing and furnishing. In this too often neglected portion of the house each room is carefully partitioned and its space utilized. There is, of course, the boiler room with its efficient modern heating plant, garbage burner and hot water heater. And then there is the laundry fully equipped with all the aids which electricity has made possible for taking the drudgery out of this necessary work.

Besides these there is a recreation room. Placed at the southern end of the basement it is light and attractive with its massive stone fireplace, billiard table and plastered, painted walls. And all this is reached by a broad, easy stair and well lighted hallway.

# Cast Stone Industry to the Front

Use of the Concrete Product by Leading Architects Result of Well Developed Factories with Adequate Facilities for Service

By A. J. R. CURTIS

THE increasing popularity of cast stone, particularly in the larger and more discriminating building markets, has been a matter of common notice during the past two or three years. The term "artificial stone" hardly seems to fit the concrete product, for there is nothing artificial about it—the finished material representing merely a scientific reconstruction of the elements of natural stone. A typical cast stone, for example, contains white and gray portland cement produced by calcining limestone or cement rock; white and gray marble, quarried as for natural stone purposes, crushed, screened and recombined in proportions calculated to give greatest density, and mineral pigments obtained from ore.

Cast stone, as produced today by reputable manufacturers, is a building material suitable for both facing and structural purposes as well as other architectural requirements. The process of manufacture consists of casting the desired piece in molds made of sand, wood, plaster or gelatin, which are filled with concrete mixture especially designed as to color, gradation, consistency and other qualities. After suitable curing and aging, the finishing of the castings is accomplished by scrubbing with acid solutions or by the employment of methods comparable with those commonly used in finishing marble and granite.

Procedure in well organized cast stone factories starts in the drafting room where a full set of working plans, and sometimes paper templates, are made, usually from the architect's drawings. These go first to the modeling

department where clay or plaster models are made by expert workmen, or to the pattern department where wood patterns, sweeps and templates are prepared. Expert modelers, carvers and pattern makers are required, who must fully understand shrinkage and other qualities of concrete as well as the exacting technique of drawing intricate mold faces away from the concrete without damage.

After the clay and plaster models and the wooden pattern work have been submitted and approved by the architect, they go to the casting room with a complete set of detail plans. The architect then selects the desired color, texture and surface treatment from samples of stone made from exact formulae.

## Finest Materials Required

The formulae include not only the exact proportions of cement, stone, water and mineral pigments to be used, but the grading of the stone accurately by screen sizes. Gray and white portland cement are used separately and in combination, as color values may require.

Marble is the most commonly used stone, a large proportion of that used in the eastern part of the United States coming from the famous quarries in the vicinity of Tuckahoe and Gouverneur, New York. The Tuckahoe quarries yield a pure white dolomite stone which has proven to be exceedingly virile in influencing the color of the finished product. Not all white stone, when mixed with gray portland cement, will retain a dominating influence on color.



First Baptist Church, Savannah, Ga., Built of Concrete Stone Which Has Been Cut and Tooled After Casting. Stone work executed by Cut Art Stone Company, Savannah. F. McRae, builder, and Henrik Wallin, architect.

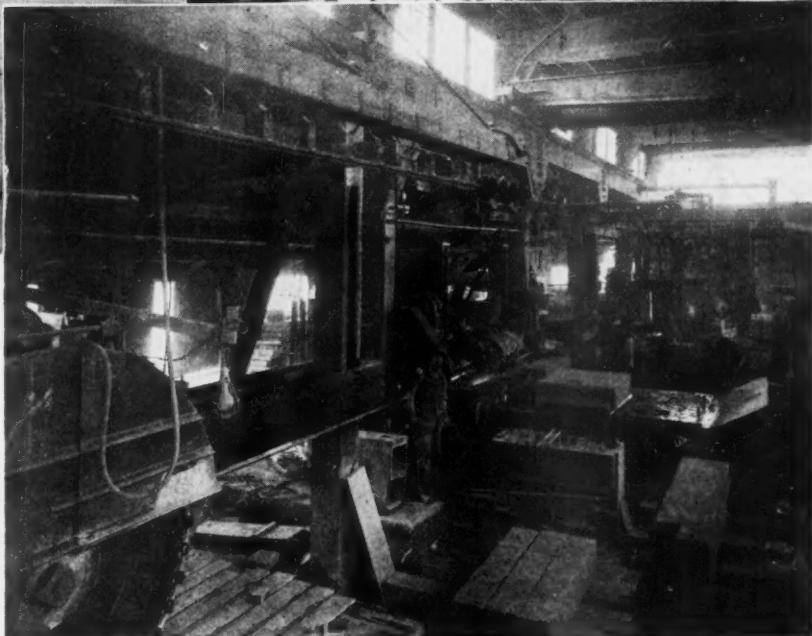


Casting Room of a Large Concrete Stone Company—the Simbroco Stone Company, Boston. Notice the two large capacity, overhead traveling cranes which handle these heavy pieces.

At Gouverneur, blue-gray and white marbles of excellent color value are obtained, and there is a great demand for cast stone made with these materials. Several other marbles are being introduced to a certain extent. Buff travertine from Colorado, white marble from Georgia, Pennsylvania green, black copper slag, and many of the well known granites are used in large quantities.

Marble is preferred for its excellent color values and because it is more easily tooled than granite, which is of greater hardness. Black copper slag is used in various sizes and proportions, imparting black spots through the mass if sparsely used. A very attractive dark slate stone is made of a mixture of gray cement, copper slag and manganese oxide, the latter reground with the cement. Only a few mineral pigments are relied upon for obtaining color effects—the lighter tinting being superior to more vivid colorings and more in demand than the latter. Buff iron oxide gives the buff tints, red iron oxide the reddish coloring and ultramarine or Prussian blue certain shades of which blue is a factor.

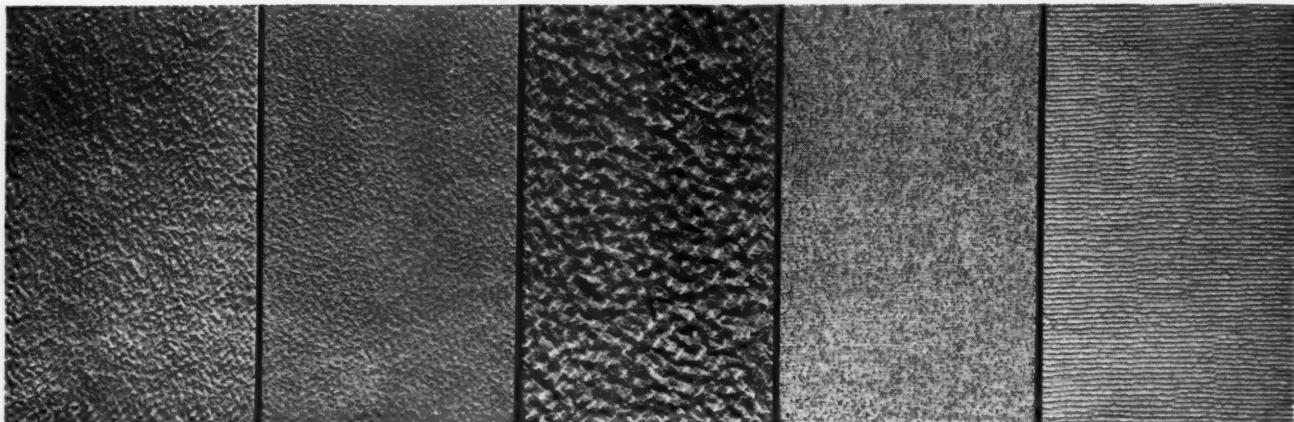
The one or more varieties of stone used are crushed by large roller jaw crushers and by mammoth rolls to maximum size of  $\frac{1}{4}$  inch to  $\frac{1}{2}$  inch separated according to size by power screens, dried and recombined with the cement



Carborundum Saws and Planes Used for Cutting and Tooling Art Cast Stone in the Plant of the Onondaga Litholite Company, Syracuse, N. Y. A \$10,000 diamond cutter shows in the immediate foreground.

in proportions specified by an accurately fixed formula. The mixing is done in large batch mixers, frequently capable of handling one to two tons of material at a time. The water used in mixing is also carefully measured—it being very important that exactly the proper amount is used and that every batch receives the same amount. If the mixture is too dry it will not flow in the molds and if too wet there is likely to be more or less separation of the particles according to weight.

Perhaps one of the most interesting features of the process is the use of steel reinforcing, setting hooks and anchor bolts. Because it is possible to reinforce cast stone as desired, architects often design slender pieces of this material to carry heavy loads, in order to obtain both



**Five Popular Tooled Finishes on Concrete Cast Stone.** These effects are so similar to natural stone that the difference can scarcely be detected but the concrete stone is fully as dense and durable.

architectural effect and the structural strength they are after. Setting hooks are usually loops made from heavy steel bars, which are imbedded in the concrete stones so that they can be easily and safely picked up by crane or derrick and set in position in the job with minimum labor. These hooks must be carefully placed where they will be concealed after the piece is set, and their location must be calculated in advance so that the piece which they carry will be properly balanced, preferably as nearly as possible in the position in which the piece will be set. Anchor bolts are frequently imbedded for the purpose of providing an attachment later between the piece and other parts of the construction.

In respect to the use of steel, cast stone is quite unlike natural stone, in which reinforcing and setting hooks are impossible and anchor bolts quite expensive and difficult to set effectively.

#### New Technique in Finishing

Although in commercial practice only a few of the endless number of attractive methods of finishing cast stone are being used, some of these will be mentioned to give the reader a general idea of their range. Cast stone is different from the natural product in that the latter responds only to a particular range of treatments corresponding to its own hardness. For example, a soft stone looks soft largely because we almost instinctively recognize "soft stone" treatment. Similarly, we recognize a very hard stone for its "hard surface" treatment.

With concrete it is possible to start the surface treatment at any time during setting up to the point of maximum hardness. A piece of cut cast stone which is finished while rather soft and then allowed to harden retains a softer appearance than if worked after acquiring full hardness. With this material it is possible to obtain the color of one stone, the texture of another and the finishing technique usually applied to a third. Thus, the concrete product contains a wide range of architectural possibilities.

If it is desired to finish the cast stone similarly to the natural product, curing usually is continued to a point where the acquired hardness is sufficient to give results comparable with those obtained in finishing medium hard marble. Finer results being obtained under certain circumstances by allowing the stone to become harder before finishing, but this involves delay and sometimes the use of expensive storage space greatly out of proportion to the value of possible improvement.

Carborundum machinery is used extensively in cutting cast stone, and the factories must be provided with the equipment necessary to cut and true by template the many different carborundum wheels constantly in use. Carborundum saws which are many feet in diameter travel at high speed, cutting through massive blocks of stone with



**This Pleasing Example of Ecclesiastical Detail Has Been Executed in Concrete Stone Which Has Been Tooled to Produce Exactly the Stone Carving Effect Desired.**

less manual labor than used by a grocer slicing a cheese; great carborundum planers, resembling the largest equipment of machine shops, produce not only flat surfaces but miles of delicately traced copings, sills and similar stone.

Rubbing beds are employed for ashlar work. A score or more of special machines have been devised to meet difficult cutting problems such as that of planing the surfaces of fluted columns which have a taper or entasis. In addition to these the men employed as cutters use a

(Continued to page 167)

# High Up On the Steel Framework of Skyscrapers

## Steel Erecting Crews Perform Stupendous Tasks

**W**HEN the structural steel worker goes aloft to set the steel on a skyscraper, he literally takes his life in his hands. That there are so few accidents is due to the nerve, skill and daring of these men who work for \$1.37½ an hour—no more than earned by many other trades who work in perfect safety.

The man on the street who feels but a moderate breeze has little conception of the force of the wind at these heights. Worse still, it often blows in gusts, so that a man poised against it finds it difficult to regain his equilibrium when the wind suddenly slackens.

Mere height does not seem to awe the structural steel setter who will nonchalantly cling to a steel column as it is hoisted aloft by the derrick, perhaps to the topmost tower of a lofty skyscraper, swinging hundreds of feet above the street level. Away down below, the street traffic looks like black dots against the pavement and all around is the terrifying emptiness of space. There are times when both hands are required for his work and he must stand

balancing on a narrow ledge of steel. He must be entirely self-reliant as no other human hand can reach him if he falls. Yet these men often work in winds that greatly increase the danger.

It is perhaps the irony of fate that such a large proportion of the skyscraper building is in New York and Chicago—both windy cities. Strong winds set in off the ocean at New York and off Lake Michigan at Chicago. Or it blows strongly from the land, to compensate atmospheric conditions over the water.

Construction work is often delayed by the elements—storms of wind, rain, snow, sleet or extremely cold weather. The season is short enough and the lay-offs frequent. When the Straus Building was under construction at Chicago the steel framing was carried on many days when strong and gusty winds made the work extremely dangerous—days when experienced structural steel men said that it was suicide for structural steel setters to go aloft. Had the men waited for calm weather the completion of



Where Daring as Well as Skill Is Required. This steel framework is 790 feet above the street level. The picture was taken when the Woolworth Building was under construction.

this building would have been delayed for several months beyond the date when it was actually completed.

Work on the Woolworth Tower, in New York, was also extremely hazardous, due to high winds as well as the record-breaking heights of the building—792 feet above the pavement. Yet at the very top of the latter building the structural steel men hung on with one hand while one foot rested on a



Frank Frego, One of the Best Known Steel Men in Chicago, Is Now in Charge of One of the Three Crews Working on the New Stevens Hotel

narrow lug of steel. Or they stood erect with both hands free, to bolt the columns in place prior to riveting them. Then, with the riveting started, red hot rivets were tossed and dexterously caught in a bucket at these dizzying heights.

Usually a scaffold is slung for the riveter and the most dangerous work is that of the connectors—the men who climb aboard a piece of steel and are swung aloft to place it in position. It requires great skill and team work between the connectors, the signal man and the man at the levers of the hoisting engine, in order to set the steel with connecting rivet holes in exact alignment. It is rare, indeed, that the steel is set exactly right on the first trial.

Many city ordinances now pro-



This Picture Was Taken on Top of the Morrison Hotel Tower, Over 500 Feet Above the Ground. It shows Frank Frego, best known as "Wabash," giving instruction to his signal man.

hibit men from being hoisted by derrick all the way from the ground perched on pieces of steel or stone. It is, however, often necessary for men to go up with the steel from the second floor below the point where the steel must be set. When the steel finally rests in position, with the rivet holes lined up, bolts are slipped through, nuts spun on and tightened with a wrench, afterwards to be riveted together by a power hammer with its rapid tattoo against the red hot rivets.

The highest steel so far erected in Chicago is that of the Morrison Hotel Tower, which reaches a height of 46 stories, 515 feet above the street. Beyond this, a steel flagpole extends to a height of 637 feet above the ground.

One of the best known steel men in Chicago had charge of the crew which erected the steel framework of this tower. Frank Frego, widely known by his nickname of "Wabash," is the man, and he is still good humored and efficient, although he walks with a limp and the men say: "He has been all smashed up." "Wabash" got his name from his work on the Wabash bridge over the Monongahela river at Pitts-

burgh, early in his career as a steel man. He learned his trade as a "rigger" and in changing rolls around blast furnaces and steel plants near Wheeling, W. Va., and, later, as a "decker" for the Thompson Steel Works in Pittsburgh. He has also had extended experience on bridge work for the Southern Pacific and Union Pacific Railroads in the far West.

He first fell on a job at Wellsville, Ohio, where he was working on a viaduct. Here he fell 30 feet and broke both legs. He had one ankle broken on the Alaska Commercial Building, San Francisco, where a piece of steel rolled over him, and he had a leg



Though Surrounded by Many Large Buildings the New Morrison Hotel Tower Rises Far Above Its Neighbors, the Highest Structure in the City of Chicago.

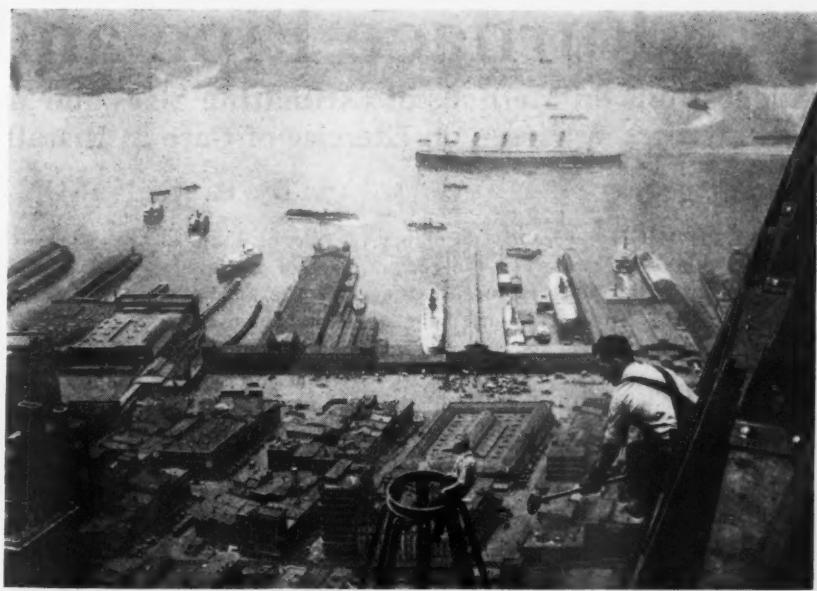
broken a second time when working on Butler Building No. 1 in Chicago. Perhaps the worst of all was when he lost three fingers of one hand working on a bridge approach. Two pieces of the bottom chord were bent and "Wabash," as usual, did not hesitate to tackle the difficult and the dangerous. He undertook to get the splices together and his hand got caught and crushed.

Recent notable buildings on which he has superintended the steel erection have been the Straus Building for Thompson-Starrett Company, the Morrison Hotel Tower for John Griffiths & Son, and he is in charge of steel erection on one section of the new Stevens Hotel, now being built in Chicago. This building is so large that the steel framing work has been divided into three sections with three separate crews. "Wabash," however, has the most difficult section, where the largest and heaviest pieces of steel are to be placed.

For instance, on his section, there are eight columns 85 feet long to carry the trusses for the large auditorium, the bottom chord of which will be on the fifth floor and the top chords on the eighth floor. The columns will weigh 30 tons each and will be so heavy that two special derricks have been rigged to set them, each 60 tons capacity with 98 feet radius. The stiff legs of these derricks require 125 tons of steel to counterbalance them. The Straus Building had a record-breaking piece of steel in the framing—a 66-ton girder—but the trusses for the Stevens Hotel are even heavier.

Are steel men superstitious? "Wabash" says some of them are and tells of a man working for the Ferro Construction Company on a bridge at Danville, Ill. This man seemed to have a presentiment, for he walked into the construction office one morning and said:

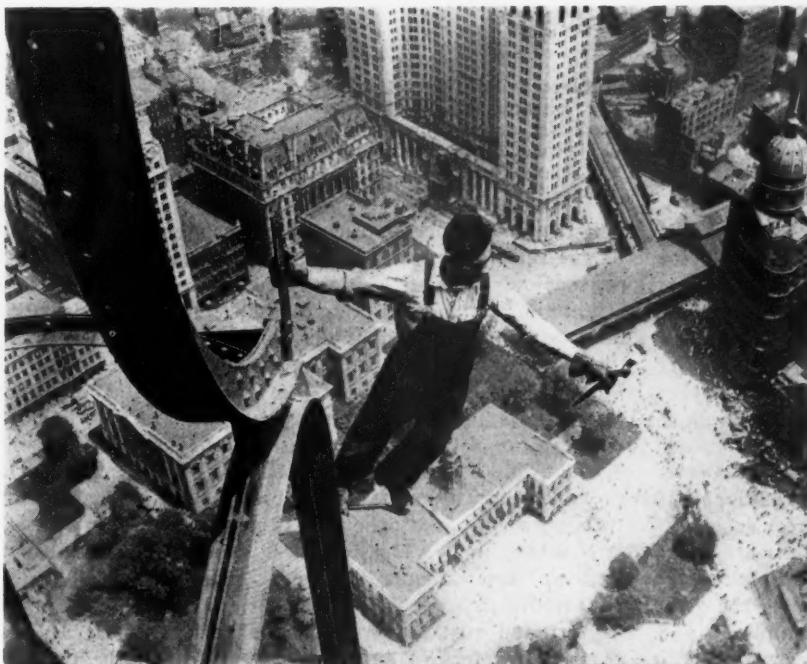
"If anything happens to me today, send my watch and money to the folks at this address."



How Would You Like to Be the Man Perched on the Steel Framework with a Heavy Maul in His Hand? He probably had to swing it to drive temporary bolts in place.

Then he walked out on the bridge to his work, fell and was killed. But, considering the risks which steel men take, the accidents are marvelously few. Wabash has never seen a serious accident except his own. But he tells of a steel connector who was working on the "tag line" of a big Cleveland hotel when it was being framed. This man was rolling a cigarette as he stood at a great height. He had difficulty in lighting it in the wind and stepped around the steel column on which he was at work. But the steel had no lug on that side and he fell.

Those who enjoy the benefits of modern steel frame buildings and bridges certainly owe a debt of gratitude to these skillful, courageous, hardy men of the steel crew who daily imperil their lives that great metropolitan cities may reach up towards the sky and that thousands of office workers may work in comfort and safety far above the city's smoke and turmoil where the light and air are good and windows command a far vision of city and country.



This Picture Shows Clearly the Kind of Foothold on Which Structural Steel Men Must Rely. It must be exhausting work to hang on with one hand and work with the other, yet the men of the steel crew frequently do it.

### Cast Stone to the Front

(Continued from page 164)

variety of hand tools corresponding closely with those used in the preparation of natural stone. On the average not over 25 per cent as much hand tooling is required on cast stone as on natural stone of comparable hardness, the most proficient workmen are required and the cut cast stone factories now employ a large proportion of the expert stone finishers of the country.

Many heavy blocks of natural stone were formerly shipped long distances and there tooled to a fraction of their original weight. Today blocks of cast stone leaving the factory weigh practically the same as in the finished work. Great blocks or columns of cast stone are usually cored to reduce the weight for shipment, for economy of foundation material and to reduce cost of setting. Economy of transportation is one of the great advantages of these methods.

# Furnace Pipe and Fittings

Suggestions on Methods of Estimating Sizes and Why Successful Heating Depends on Exercise of Care in Installing Ducts

By R. C. NASON

ALTHOUGH there are a number of rule of thumb methods of estimating the correct sizes of warm-air distributing pipes in furnace heating, more accurate results will be obtained by use of the method sponsored by the National Warm Air Heating and Ventilating Association and known as the Standard Code. This is a scientifically compiled method of calculation of heat loss from the rooms to be heated, then delivering a sufficient number of heat units to compensate for the loss.

The modern tendency of giving up quick estimating rules in preference to more accurate methods may be carried out further by the use of drawings wherein are charted the location of the heater, registers and all pipe sizes. Such plans eliminate much of the guesswork which has characterized the installation of furnaces in the past, hence represents good practice.

Before selecting sizes of leaders, as the horizontal pipe runs in the basement are called, the location of the heater should be considered. This would preferably be nearer walls having the greatest exposure. In many localities these are the north and west sides, yet in certain states prevailing winds come from other directions. Sides on which pipe runs are longest should be favored, with a view to equalizing the length of leaders as far as possible, yet giving preference to the pipes supplying living rooms, dining rooms and main halls.

Experiment has revealed that if certain factors are multiplied and divided by calculated quantities the correct sizes of leaders may be obtained. It has been found, for example, that for first floor rooms, if the square feet of glass surface is divided by 12 the net exposed wall area divided by 60 and the cubic contents of the room divided by 800 and the sum of the results multiplied by 9 the answer represents the correct size of the leader in square inches for the room being figured. Ten per cent should be added for east and west exposures and 15 per cent for north and northwest. In extra cold localities where average winter temperature is 10 degrees below zero, an additional 10 per cent should be added to maintain 70 degrees inside.

Areas of leaders supplying second floor rooms are found by making the previous divisions, but multiplying the result by 6 instead of 9. For third floor rooms the same divisions obtain and the result is to be multiplied by 5. Demonstrating the mathematics by a typical case, let it be assumed that a first-floor room having a north and west exposure is 16 by 20 feet and has a 9-foot ceiling and three windows each 3 by 5 feet. Net glass area would be, then,

45 square feet, net exposed wall 279 square feet and cubic contents 2,880 cubic feet. The equation is:

$$\frac{45}{12} + \frac{279}{60} + \frac{2,880}{800} = 12.0 \times 9 = 108.0 \times 1.15 \text{ (exposure)} = 124.20 \text{ square inches, leader area.}$$

This nearly corresponds to the area of a 12-inch diameter pipe. No leader should be smaller than 8-inch diameter.

The tops of all leaders at the furnace bonnet should be of the same height, otherwise heat would flow more readily to the higher pipes at the expense of the lower ones. To

give the heat opportunity to rise, it is recommended that leaders be given an upward slant, or pitch, of not less than 1 inch per foot.

## Pipe Materials

Either galvanized iron or bright tin are the best materials of which to make both leaders and wall stacks. The Standard Furnace Code specifies that all warm-air pipes shall be of bright tin, not lighter than IC or 28-gauge galvanized iron when diameters are less than 12 inches and of IX tin or 26-gauge galvanized iron when they are larger. Experiments have proved that wrapping leaders with a single layer of asbestos paper is ineffectual, hence should be discouraged. In fact, it requires eight thicknesses of such insulation to make pipes as effective heat carriers as bright tin.

When it is known that about five per cent of the heat available in fuel is usually lost through poor insulation the importance of the subject can be easily realized.

Bright tin pipe, having only a single thickness of asbestos paper is only 61.5 per cent as efficient a heat carrier as bare bright tin. Outside painting is useless so far as insulating is concerned, though it renders piping impervious to moisture and prevents rust. The most efficient heat carrier found in a series of tests at the University of Illinois was IC tin with three thicknesses of air-cell asbestos and one thickness of 10-pound asbestos paper.

Plain, black iron leaders, though often seen, usually prove a poor attempt at economy as more heat is lost through such pipes when rusty than through practically any other kind. The author's attention was called to such an installation a few years ago. Although heating appeared satisfactory when the installation was first made, as dirt and rust gathered on the surfaces, heat radiated from the leaders at an astonishing rate and the temperature dropped some 10 degrees between bonnet and stacks. The owner forced the fires to compensate for lost heat, maintaining temperatures at the registers at over 200

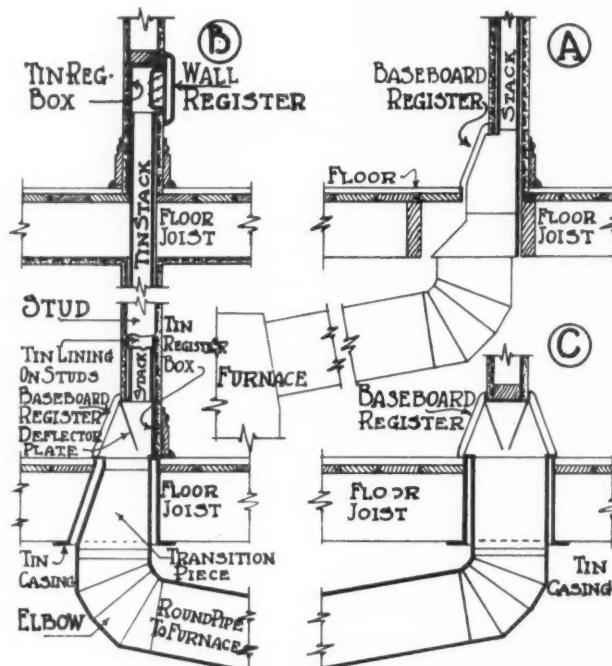


Fig. 1.—Drawings Showing the Design of Furnace Fittings—“A,” Fitting Where Single Baseboard Register Is Used; “B,” Fitting and Stack for First and Second Floor Registers on the Same Stack; “C,” Pipe Connection Where Registers Are Opposite and on the Same Stack.

degrees, which is much too high, and at the end of the season had to purchase new grates.

It was necessary to insulate the black iron pipes or install new ones of tin. The owner decided to insulate, which we did with three layers of air-cell asbestos, with the result that repair expense was far greater than would have been the extra cost of doing the work properly at the outset.

It was observed in the foregoing explanation of methods of finding leader sizes that those supplying second and third floor rooms are usually smaller in cross-section. This is for the reason that heat in rising increases in velocity. Consequently, smaller pipes carry an equal volume of heat.

Owing to structural limitations, wall stacks have only 70 to 75 per cent of the area of the leaders to which they are joined. When 2 by 4-inch studding is used, 16 inches apart, the maximum size of stack is  $3\frac{5}{8}$  by  $13\frac{5}{8}$  inches, allowing a fraction of an inch on all sides for lining studding with tin or galvanized iron for insulation and as protection against fire.

Round pipe, although the most efficient shape, can rarely be used due to lack of space. Oval pipe, next in efficiency, can also rarely be installed, nor can square pipe, third in efficiency. Necessity, therefore, compels proportioning stacks in rectangular form to suit spaces between studding. Wide, flat pipes should be avoided wherever possible, as there is considerable frictional resistance to air flow within those of this shape. In comparing a 10-inch diameter round pipe, for example, with one  $12\frac{1}{2}$  inches wide by  $6\frac{1}{8}$  inches deep, which has an equivalent area, it was found that the rectangular duct is only 94 percent as efficient a heat and air carrier as the 10-inch round one. A stack 13 inches wide and 3 inches deep, when connected to a 10-inch diameter leader, was found to have only 74 per cent of its carrying capacity.

It is hoped that with increased popularity of warm-air heating architects and others will specify studding 5 or 6 inches deep to permit the use of deeper stacks. Until such time, however, furnace installers must confine stack sizes to  $13\frac{5}{8}$  inches wide by  $3\frac{5}{8}$  inches deep. Side seams of both leaders and stacks would best be lock seams and all joints either double seamed or lapped not less than  $1\frac{1}{4}$  inches. Joints should be beaded, soldered and riveted. Dampers about two feet from the furnace casing are recommended for all leaders and in no case should warm air pipes run within 1 inch of woodwork unless the wood is covered with asbestos paper and the paper covered with tin or sheet steel.

#### Double and Single Stacks

Best results will be obtained if a  $\frac{1}{8}$ -inch air space is left between the sides of the stacks and studding and at least one thickness of 12-pound asbestos paper wrapped about the duct work. In late years there has been increased use of double stacks, those having about  $\frac{5}{16}$ -inch air space between outer and inner duct walls. This type of stack affords excellent

#### FLOOR REGISTER

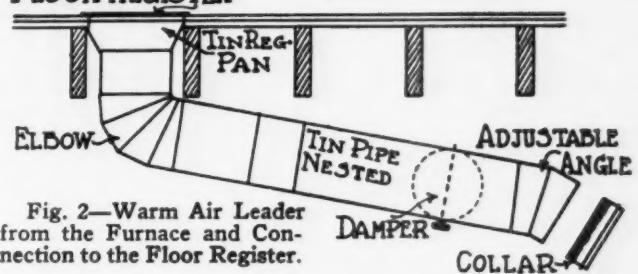


Fig. 2—Warm Air Leader from the Furnace and Connection to the Floor Register.

results and is preferable when it can be used. Single pipe, however, in protected studding spaces has nearly equal efficiency. When of the same external dimensions, single stacks are more effective than double stacks, as they possess larger internal area. When inside dimensions are compared, however, double stacks are preferred.

#### Fittings

In joining stacks to leaders, and registers to stacks, substantial gain in effectiveness of the plant as a whole may be obtained through the use of scientifically designed fittings rather than common elbows. The proportions of these depend largely on the register arrangements desired; that is, whether they are to be baseboard, wafer or floor types, whether two adjacent rooms are to be heated from the same stack or two rooms in different floors supplied by the same riser. When possible, each room would best have its individual stack.

Drawings A, B and C, Fig. 1, show three common designs of fitting, all of which will give good results. In A it will be noted that the floor stack ends at the top of the baseboard register. In B the stack is continued to the second floor where a wall register is connected. When two rooms on the first floor are to be heated by the same stack, with opposite registers, the arrangement would be as shown in C.

In many localities floor registers are still preferred. The old folk, especially, like to stand over registers and feel the warm air. There is a sort of comfort to this which has found no substitute. The best method of installing floor registers, their leaders and elbows is shown in Fig. 2.

In Fig. 3 are shown four designs of header, as the tops of stacks are called. Drawing A shows the type of header when there is to be a single sidewall register. The head shown in B permits the use of a sidewall or baseboard register. In C the arrangement when one floor register is to be installed is presented, while D shows the head in common use when there are two opposite, vertical wall registers or two baseboard registers.

It is now possible to secure practically any type of pipe fitting directly from stock, ready to fit. Unless shop facilities are exceptionally good it will prove economical to purchase fittings already made up by manufacturers who understand the requirements thoroughly. There is then the assurance of correctness of design, perfect fit and finished fabrication.

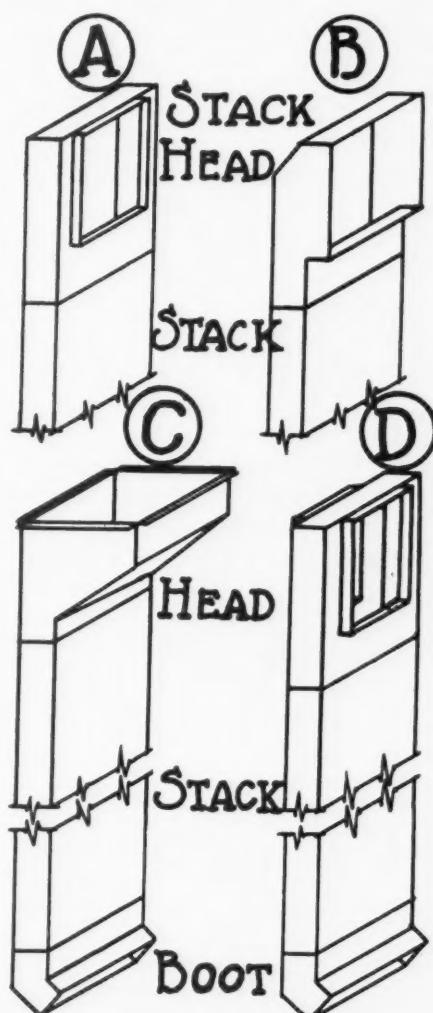


Fig. 3—Four Varieties of Stack Headers—A, for One Vertical Sidewall Register; B, for One Horizontal Sidewall or Baseboard Register; C, for One Floor Register; D, for Two Baseboard Registers.



# Homes in Colors

## *The New Urge Toward Home Building*

By WILLIAM A. RADFORD

*President and Editor-in-Chief of the American Builder*

HERE is at work in the home building field a ferment of ideas that is making folks dissatisfied with their old homes. Inconveniences that have for years passed unnoticed and crudities of architectural design of an earlier date which for a generation or more have been unseen and ignored, now are in the lime light and are forcing the owners of these old, commonplace dwellings by the thousand to remodel and modernize, or to build new.

"You might as well be dead as out of style" is an old principle concerning fashions in clothes; and it is coming to be quite as true concerning home building styles and the fashion in home furnishings and interior decoration.

A great many old homes are being successfully remodeled; but often it is better to build new.

The new home in the newer part of town is what is really wanted.

These new homes are not as large as the old; but they possess far greater comfort and livableness with very much less housekeeping labor.

Investment builders, as well as individuals building for their own use, do well to take careful note of the changes in exterior design, in room arrangement and in labor saving equipment, conveniences and appointments which are the style today.

Study the home designs that sell best, and study the nationally advertised, well-known building materials and accessories which the most successful builders have found appeal strongest to home buyers. Then, whether you are building for sale or for your own use, you will be putting maximum value into the property and you will have the advantage.

In selecting the home designs to illustrate in full colors in the sixteen pages following, we have had the benefit of direct information from some of the most successful investment builders all over the United States as to the designs that are most popular and the best sellers. These we have had the privilege of illustrating and passing along to all of our readers so that the entire home building field

can have the advantage of these designs. You can avoid the commonplace by following these authentic plans.

After the design is selected the next important thing is, of course, to decide on the building materials and the equipment to go into the house. The best architects, builders and dealers are specifying and recommending nationally advertised building materials, heating plant, plumbing goods, etc., because they know that these goods not only have dependable quality but also are so well known to the buying public that they become a real "talking point" for the new home when offered for sale. The advertising section of the American Builder is your best directory for these well and favorably known building materials and supplies.

Before you plan or build study these advertising pages and write for the latest catalogs, booklets, etc., so as to have the very latest information. Progress is being made all the time, new developments and new improvements are being brought out which you should know about.

We have not space here even to mention all of the items that should be considered for the thoroughly modern home, but the following are just a few of the most interesting:

Insulation or heat stop materials to make the home cooler in summer and warmer in winter with less fuel; an efficient heating plant whether for warm air, hot water, vapor or steam and equipped with a self-stoking coal device or for burning oil or gas; plenty of plumbing in the home with several bathrooms, at least one arranged with shower; also under the head of plumbing there is the automatic gas water heater and, for hard water localities, the water softener; electricity in the modern home plays an important part, consider the newer effects in lighting and provide plenty of convenience outlets, install electrical refrigeration and one or more electrical ventilating fans; a garbage incinerator is decidedly worth while; convenient space for one or more disappearing beds should be planned; space saving wardrobe fixtures are a convenience; package receivers for the kitchen and a good quality built-in mail box for the entrance hall are details not to be overlooked.

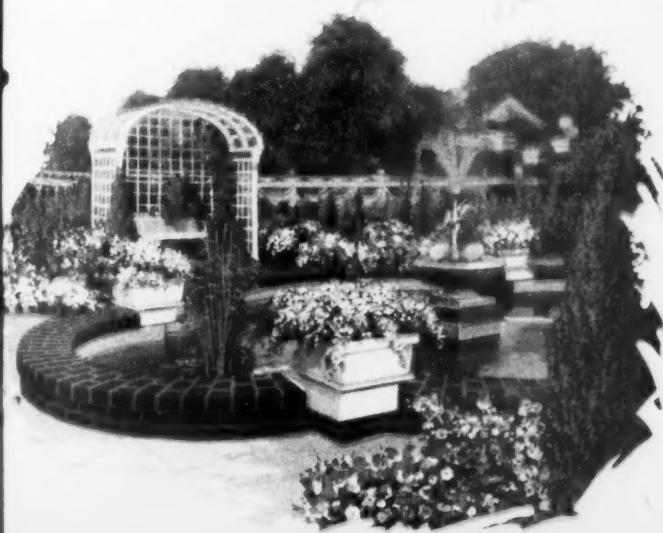
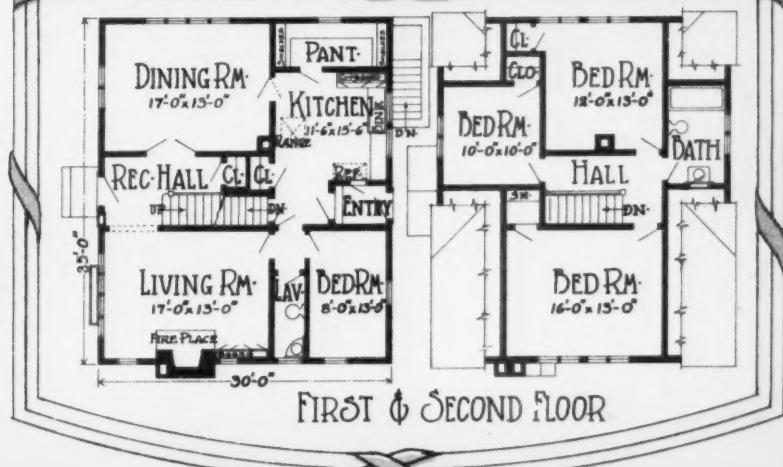
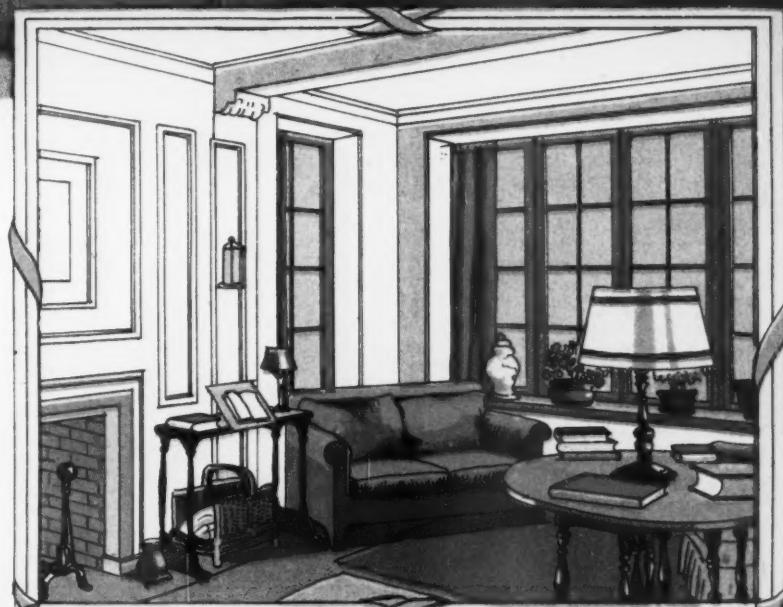
Make a study of these items and include many of them. They add little to the cost and much to the sales value, home comfort and satisfaction.

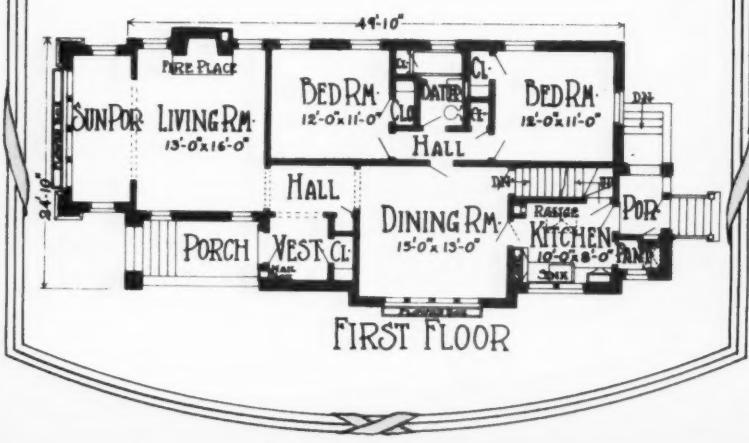
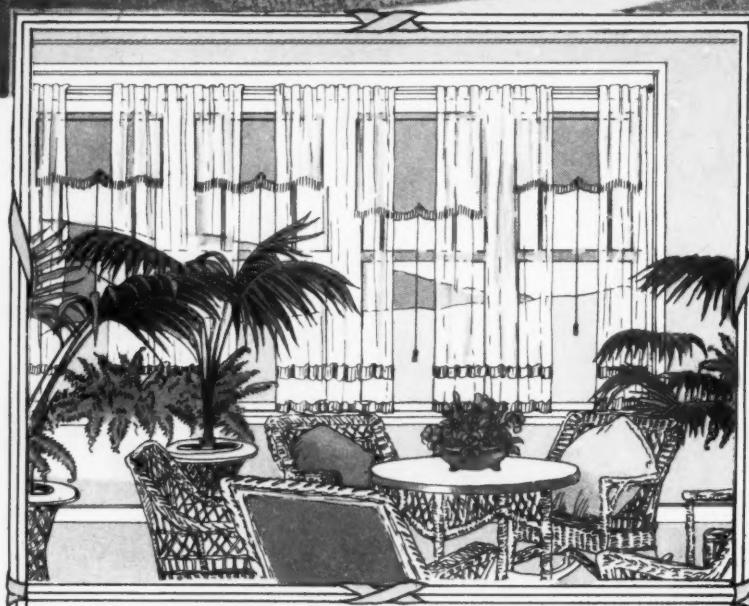


## The TENNYSON

A N English shingled cottage for the poet, artist or whoever can enjoy or appreciate simple beauty of line and composition in the new home picture. This house, 30x35 feet, contains seven principal rooms. The bedroom and convenient lavatory on the first floor are unusual and will be well liked. The kitchen is large, well lighted and conveniently placed. Notice too, that big pantry. The dining room, living room side of the house is pleasant and adequate and there are three fine bedrooms and bath upstairs. Color sketch to right gives a glimpse of the sunshiny side of the living room.

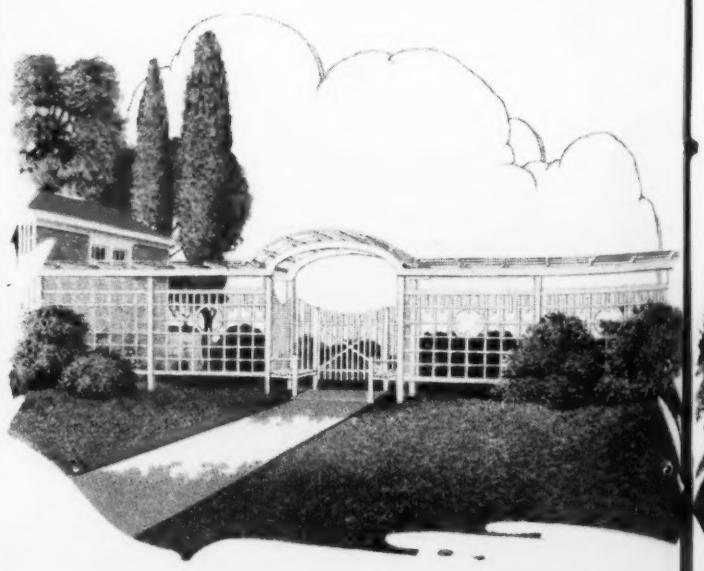
Pat. March 15, 1921 and Sept. 30, 1924.  
Copyright 1926, Wm. A. Radford, Chicago.





## The TOPEKA

**B**RICK bungalow of ornamental lines with striking roof of Spanish tile. Five principal rooms are contained and in spite of the fact that they are all well lighted and convenient, nevertheless the width of the plan is only about 26 feet, making this design well adapted to the high-priced city or suburban lot which is not very wide. The feature of this house inside is the big square living room, part of which is designated as a sun porch. The dining room is also large for a house of this size. Color sketch to left shows attractive wicker furniture and appropriate window drapes for the sun porch.

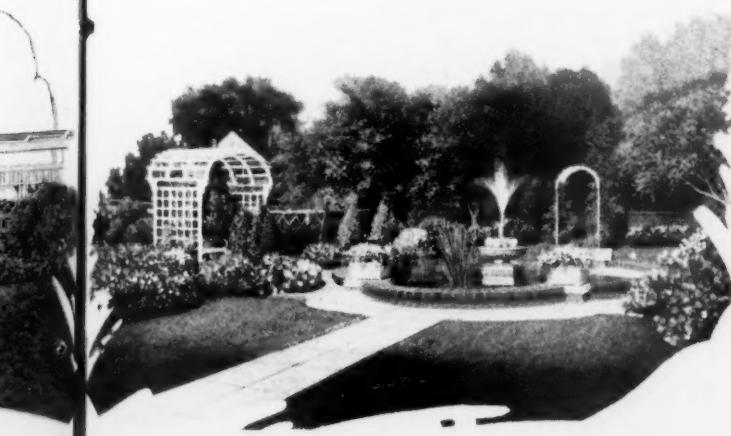
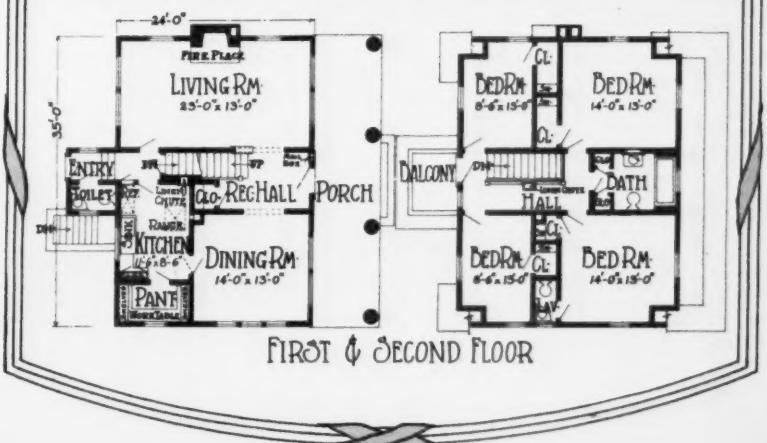




## The TACOMA

THE Pennsylvania Dutch Colonial home is characterized by the big round columns holding up the roof projection over the front porch. Those who want a big friendly front porch will like this plan. Inside the rooms are just as home-like and inviting as one would expect from the exterior. Three rooms besides the central stair hall are on the first floor and upstairs four bedrooms, two of them being extra large. Color sketch to right suggests appropriate furnishings for one of these bedrooms with canopy bed.

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Living Room and  
Dining Room in  
the Home Pictured  
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Page, S. W. P.  
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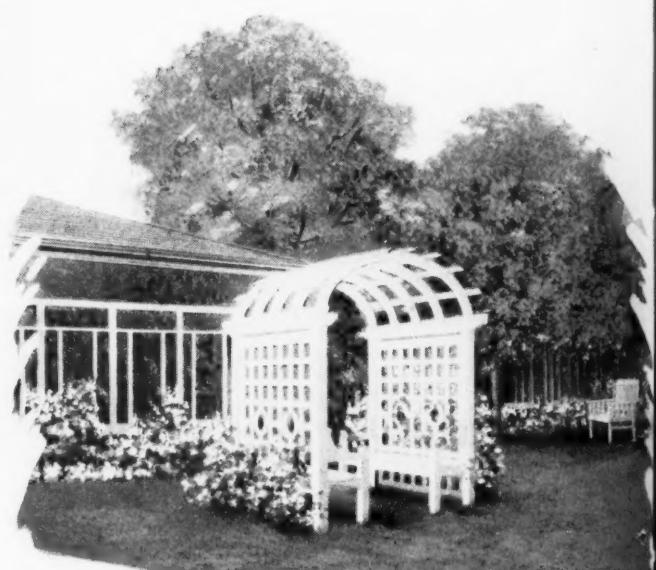
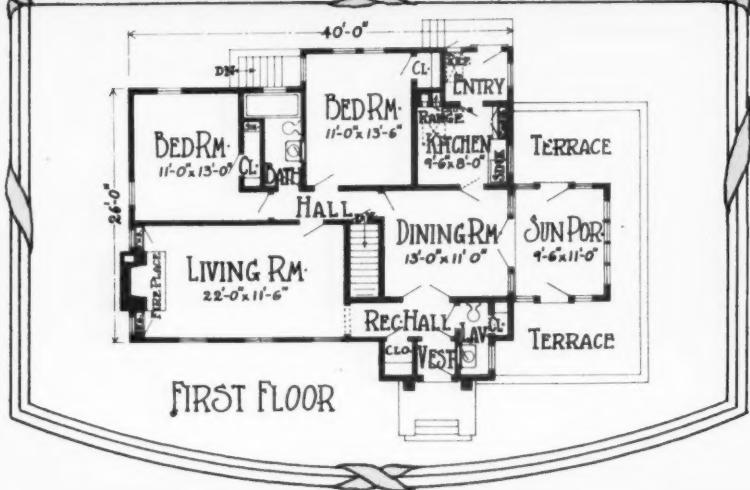
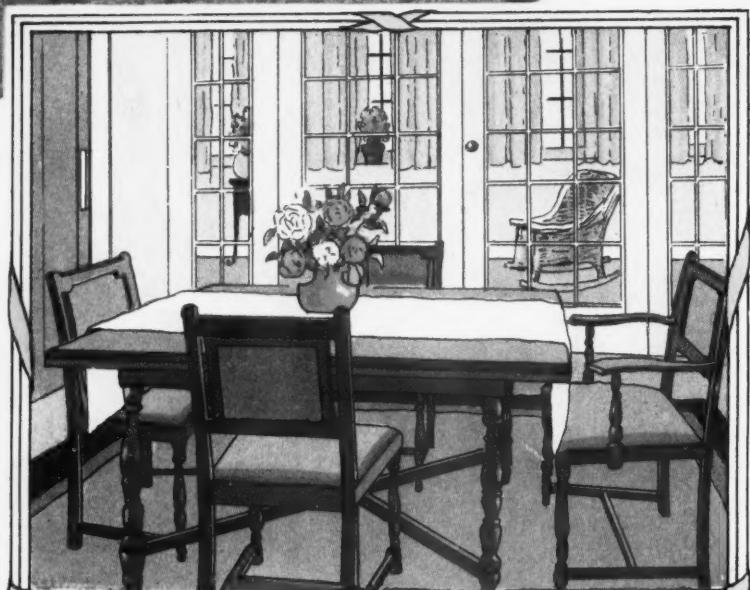
A Beautiful  
Home at Beverly  
Hills, California.  
Decorated and  
Furnished by  
the Gatch Hills  
Studio.





## The TARRYTOWN

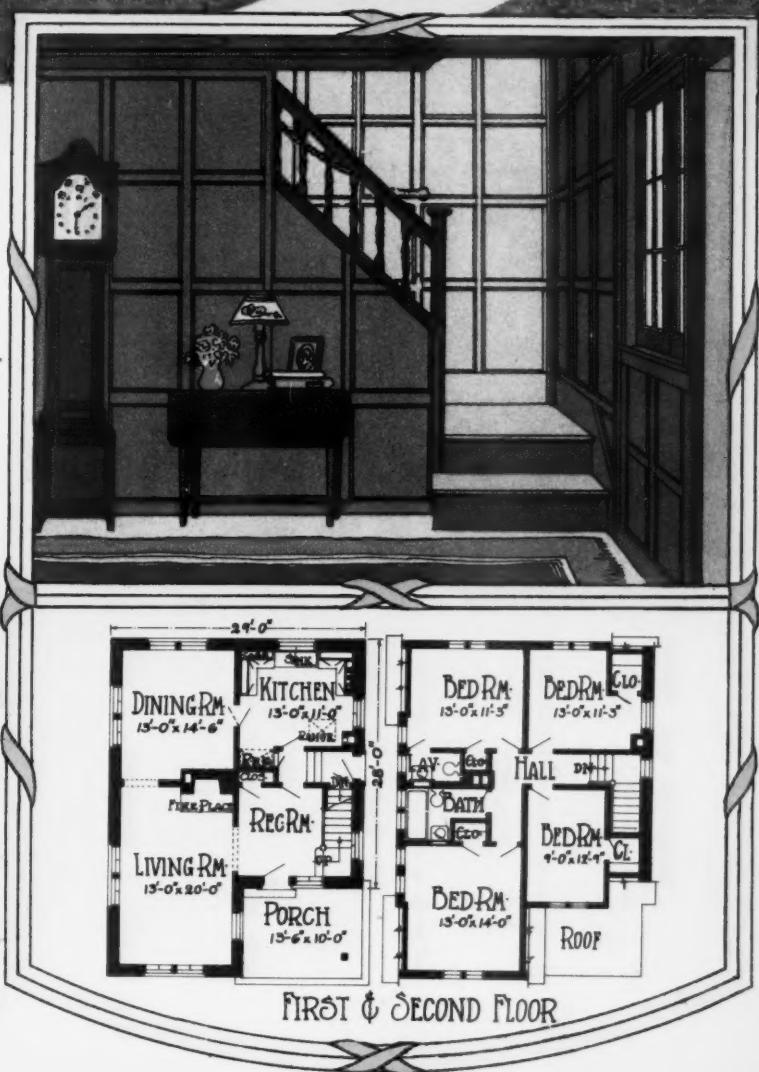
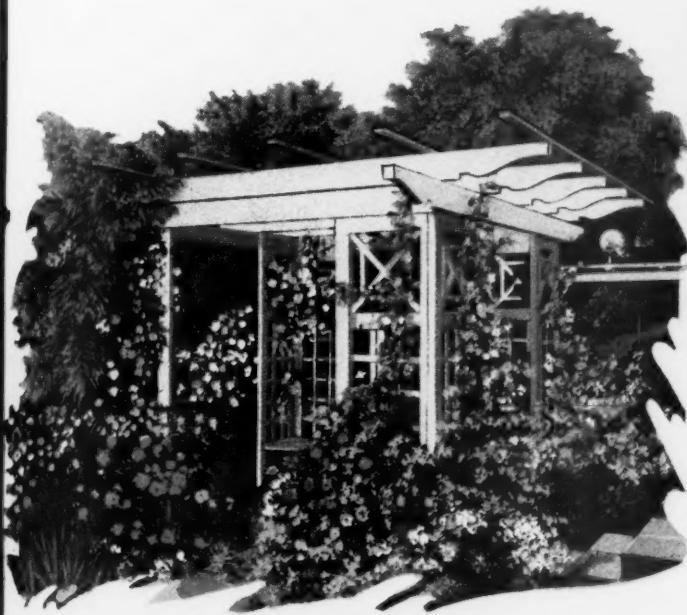
A COLONIAL bungalow of true distinction containing five rooms besides the sun porch, reception hall, bathroom, etc. The size of the house proper is 26x40 feet. The sun porch projection with its surrounding brick terrace is a wonderful supplement to the dining room. Color sketch to left shows attractive furniture for the dining room with a glimpse through the glass partition to the sun porch.

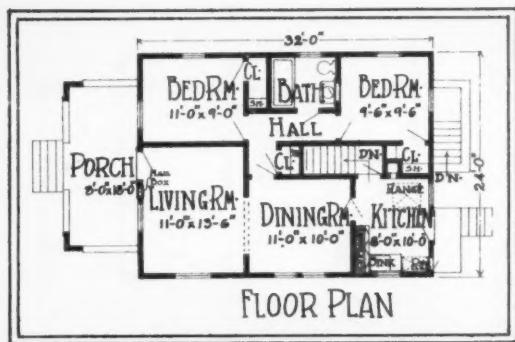




## The TEMPLETON

A TRIM little brick cottage in the English manner containing seven principal rooms besides the reception hall, bathroom, etc. The width of this house is only 29 feet, making it available for any narrow city lot. There is no waste space in this plan since the reception room is large enough to be of real service and not simply a place to pass through. The kitchen is close to the front door though well separated from the rest of the house. The living room, dining room group has the sunny side when the house is built facing the east. Color sketch to right shows the reception hall with panelled walls.



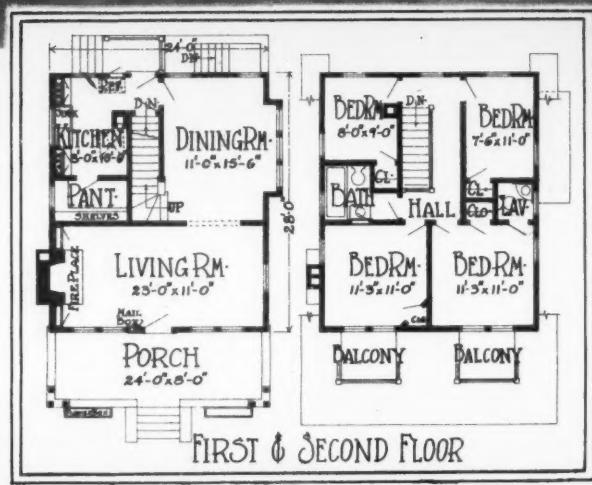


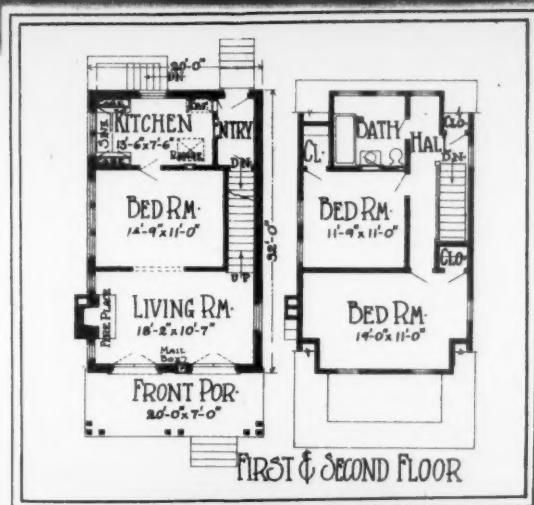
### The TIOGA

In the photograph above and the plan to the right a compact small house, providing seven rooms is illustrated.

### The TROY

The bungalow, shown below and to the left, is an excellent example of a neat, inexpensive, modern residence.



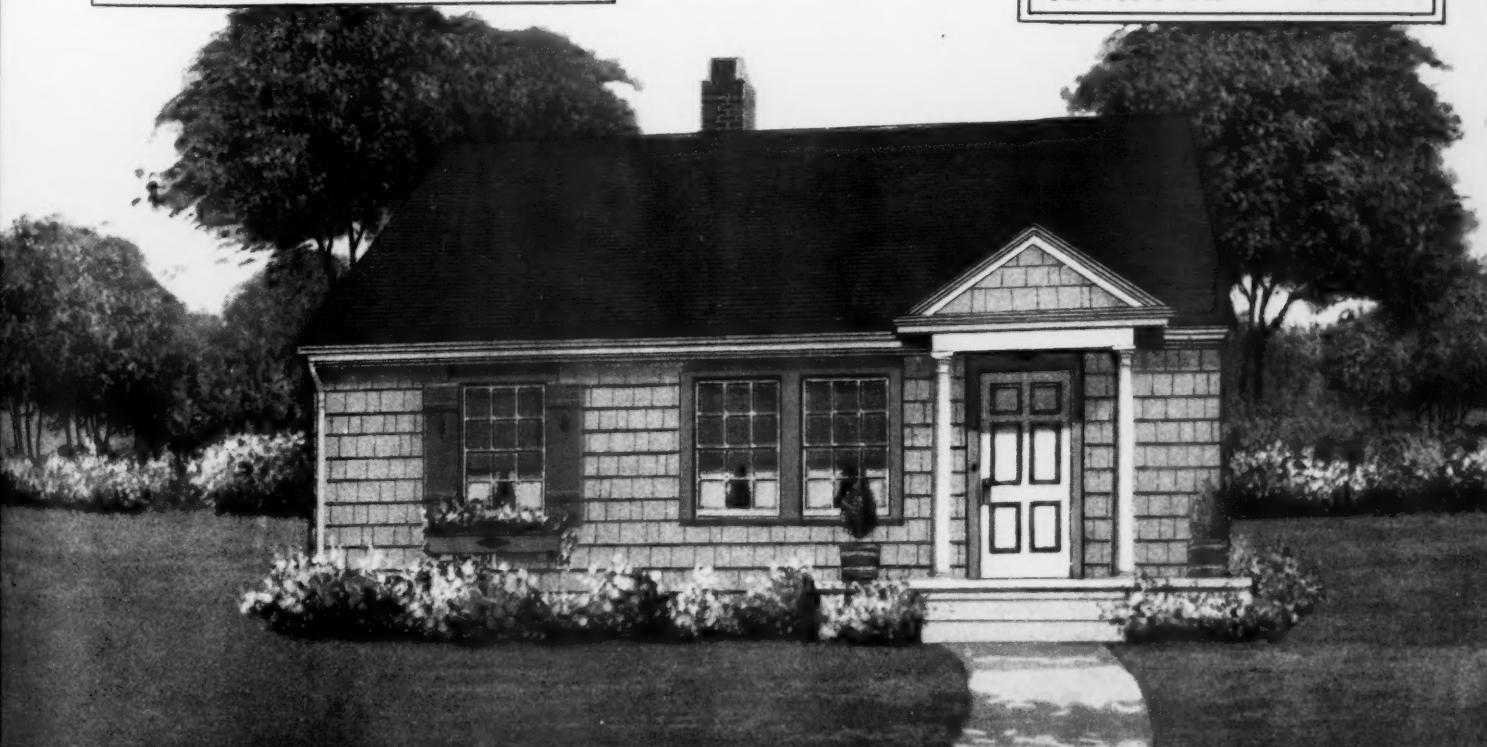
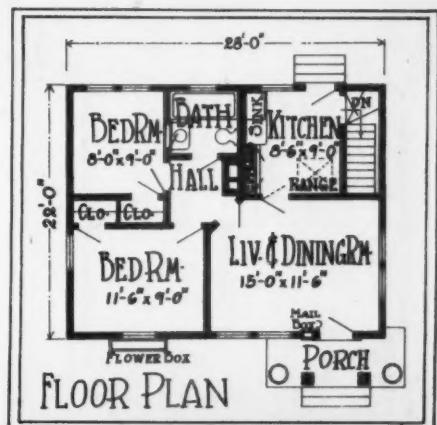


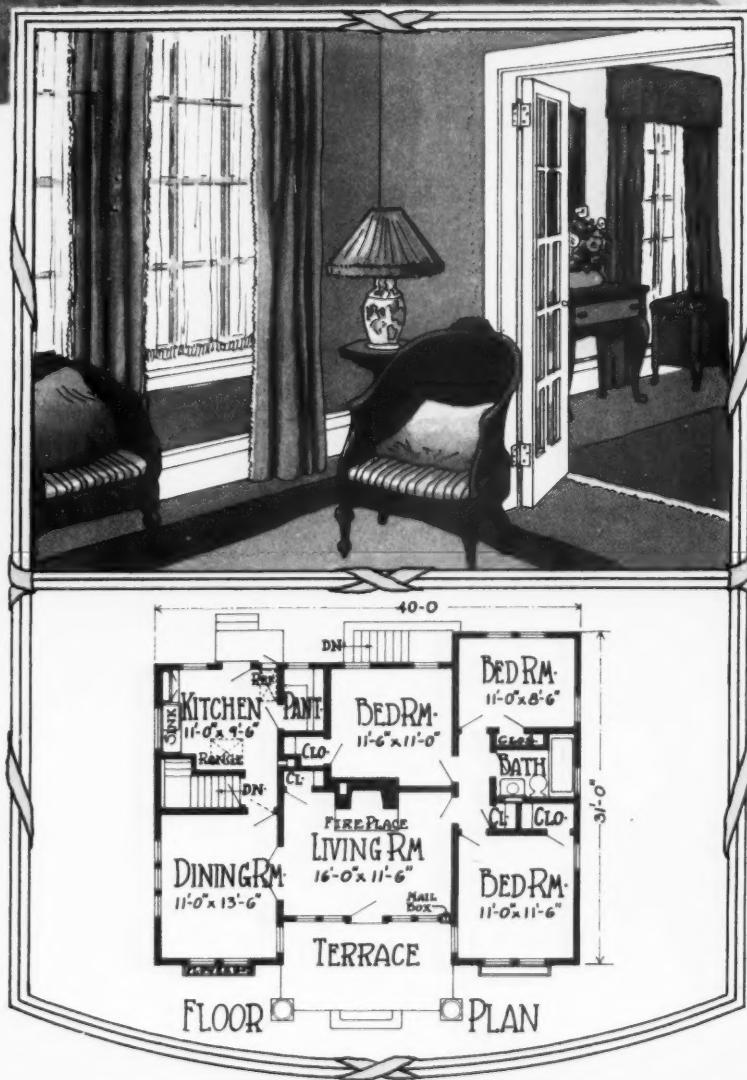
### The TALBERT

For the narrow lot the house pictured in the photograph and plan, above and to the left, is an attractive design which occupies a width of only 20 feet.

### The TELFORD

A charming little cottage below and the floor plan to the right shows the coziness and convenience of its interior arrangement.





## The TUDOR

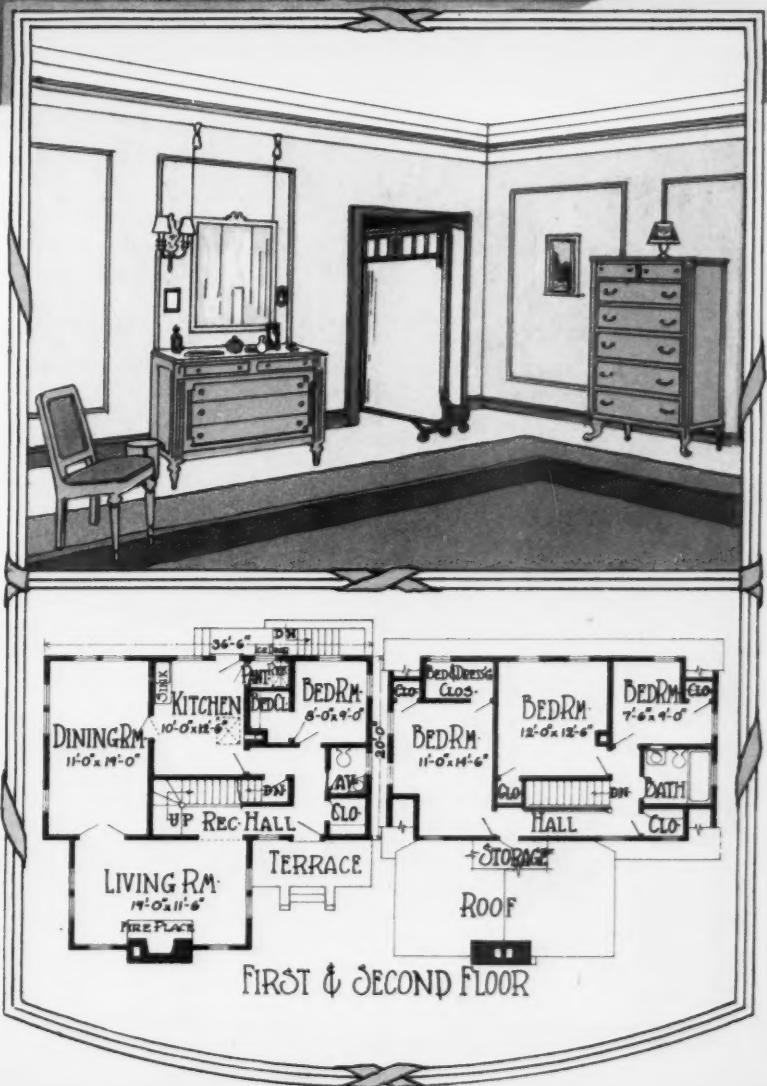
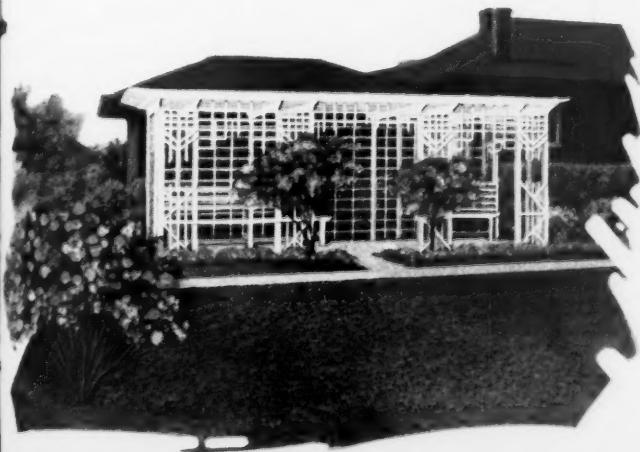
HERE is a very successful bungalow plan handled in stucco with exposed timbering. It is a three bedroom bungalow, the bedrooms being grouped together off a small inner hall. The terrace front opening into the living room with battery of four windows and the full glazed door gives this whole design an outdoor, summer vacation atmosphere that is a delight the year 'round. Color sketch to left shows a corner of the living room.

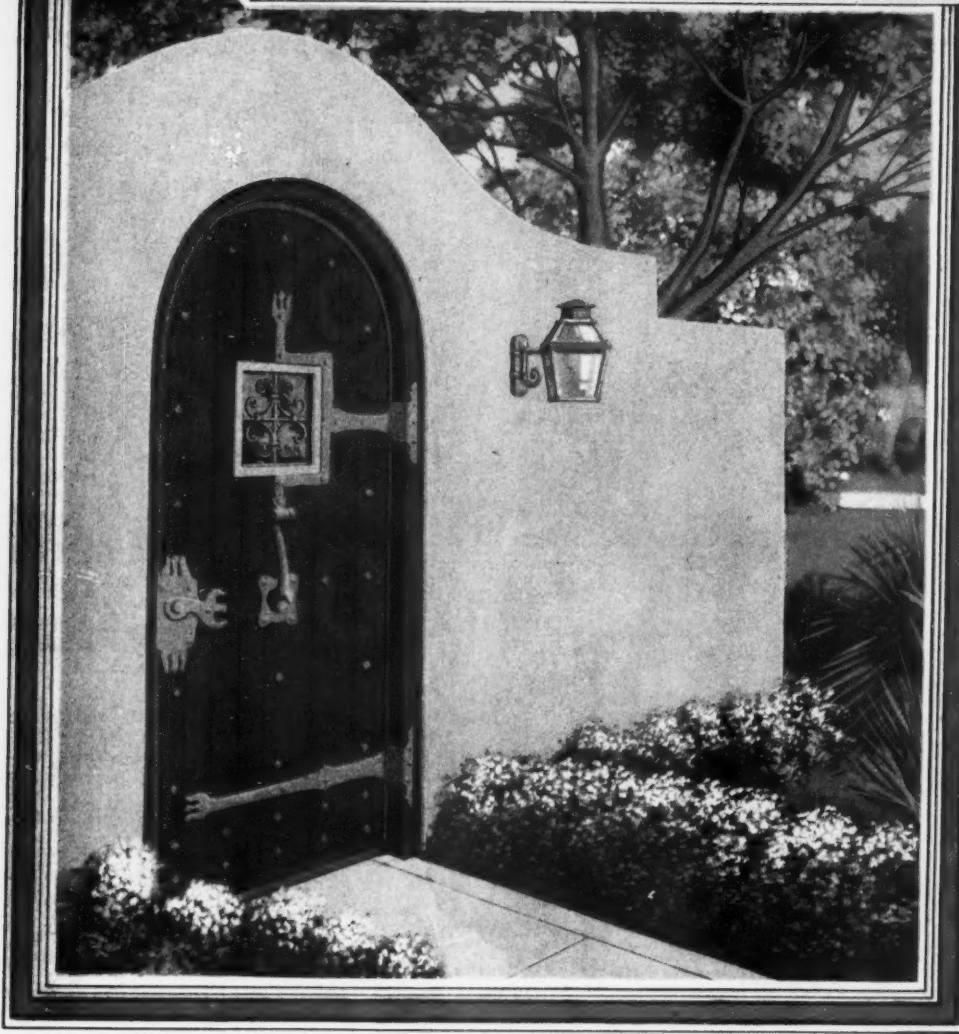
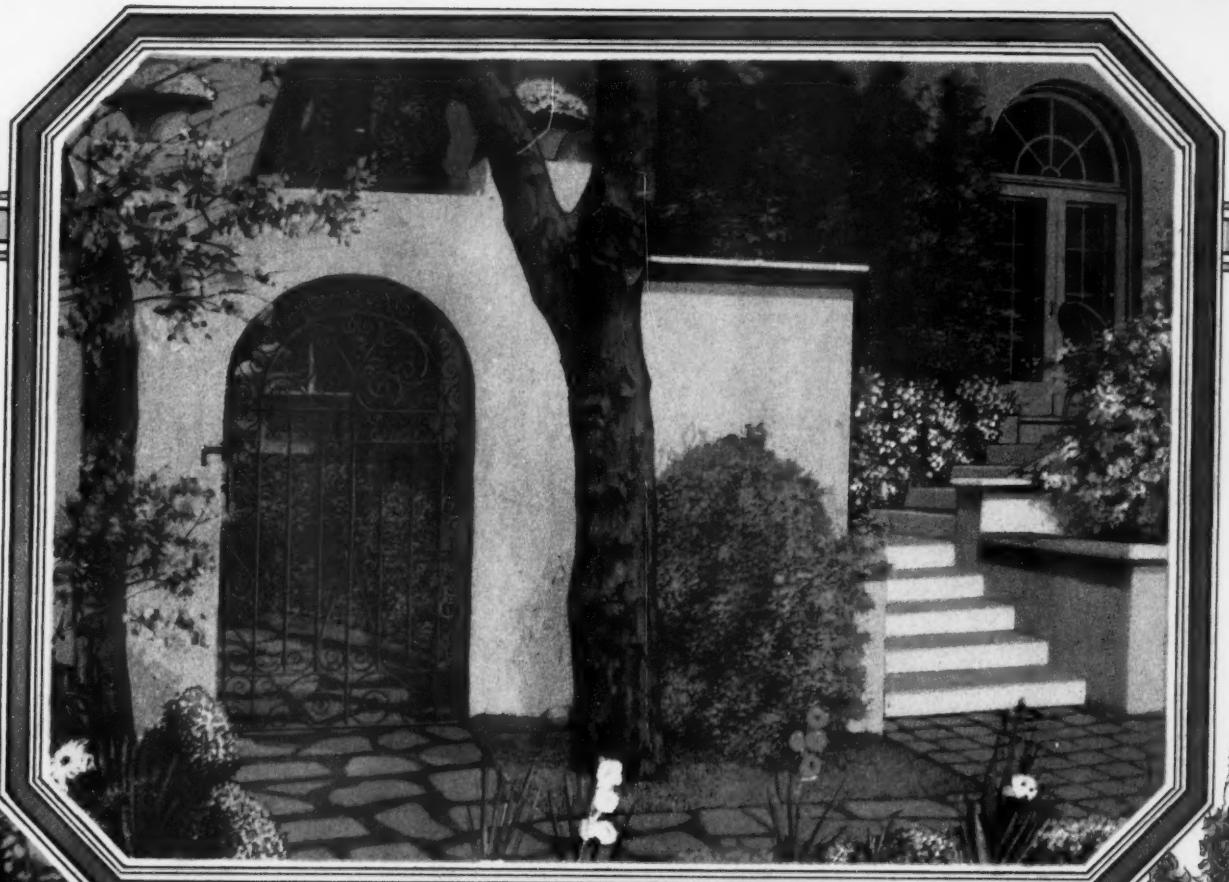
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## The TOWER HILL

THE big stone chimney toward the street is the dominant feature of this design. It suggests the blazing hearth and home-like comfort in the living room of this house which occupies all of this front wing and is lighted from three sides. Back of this wing is the main body of the house containing a large dining room and kitchen, bedroom and lavatory on the first floor and three bedrooms and bath upstairs. One of these bedrooms does double duty as a sitting room and study by day when the bed is folded up and rolled back into its closet as illustrated in the color sketch to the right.

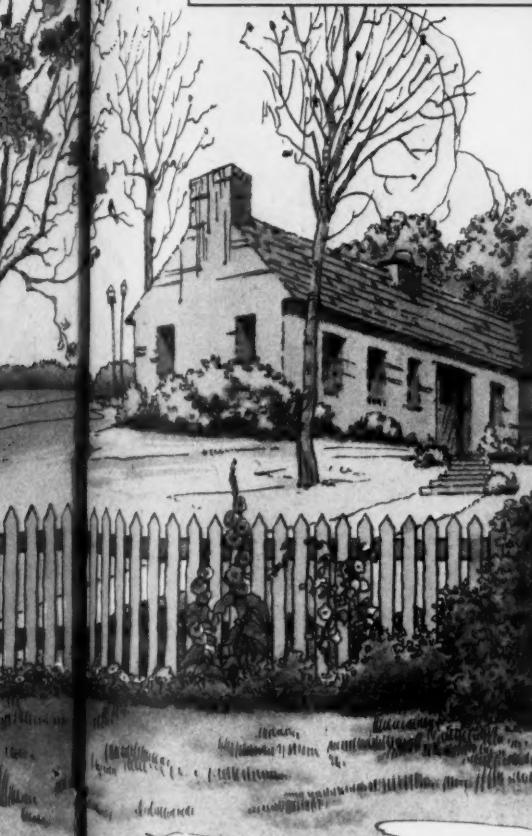


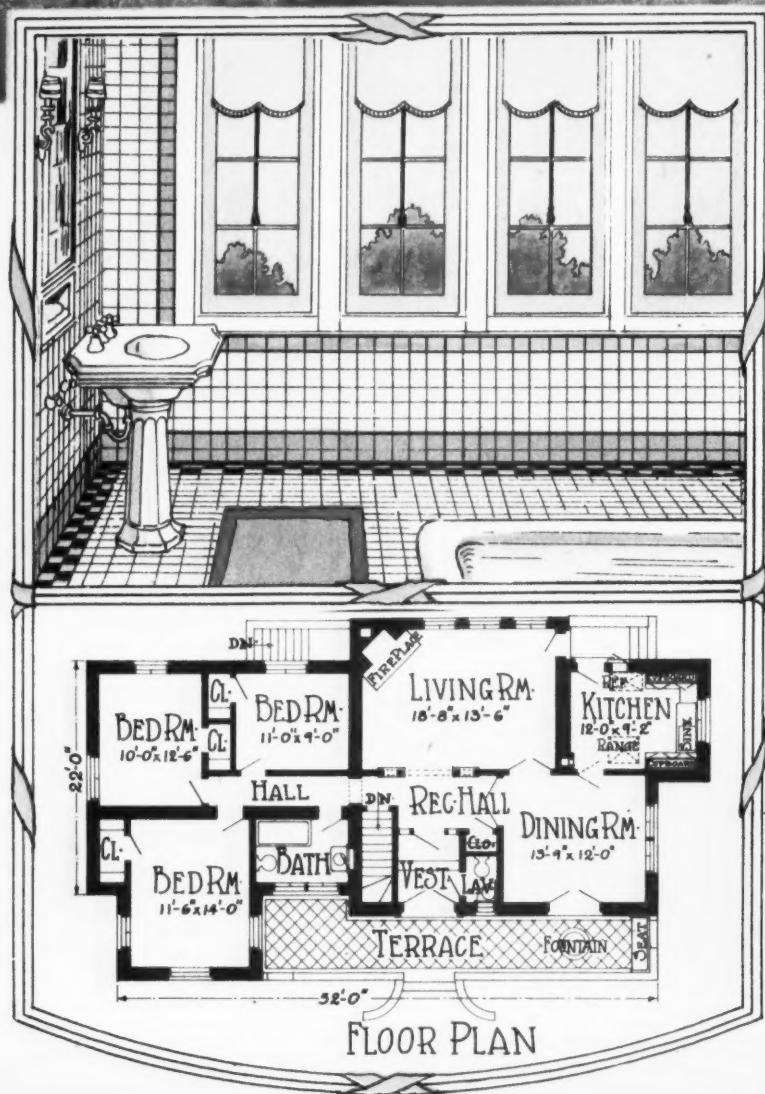
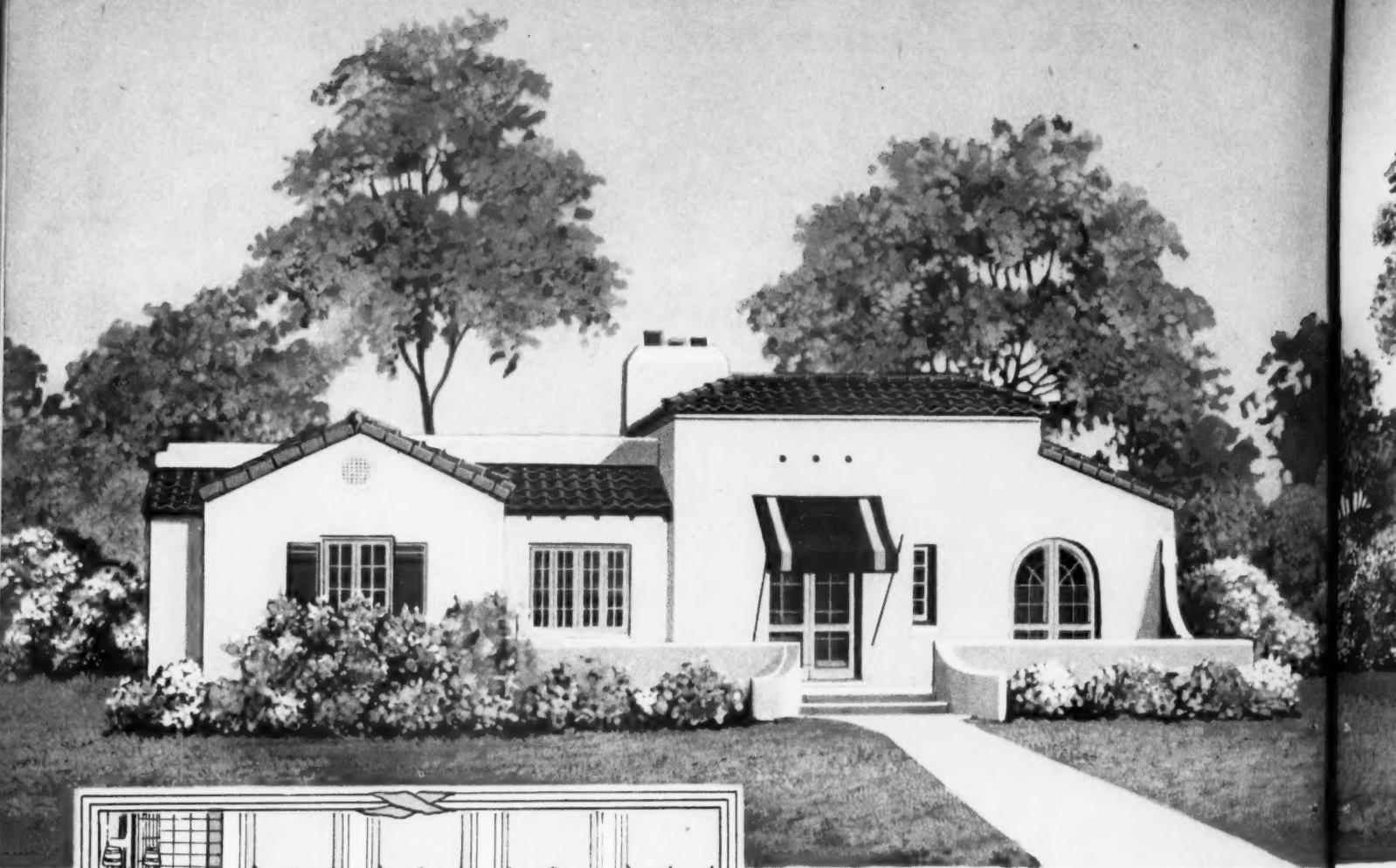




### Garden Gates of Character

Garden walls and ornamental gates have a unique value architecturally in connection with homes of Spanish, English or Colonial style. Here are a few suggestions.

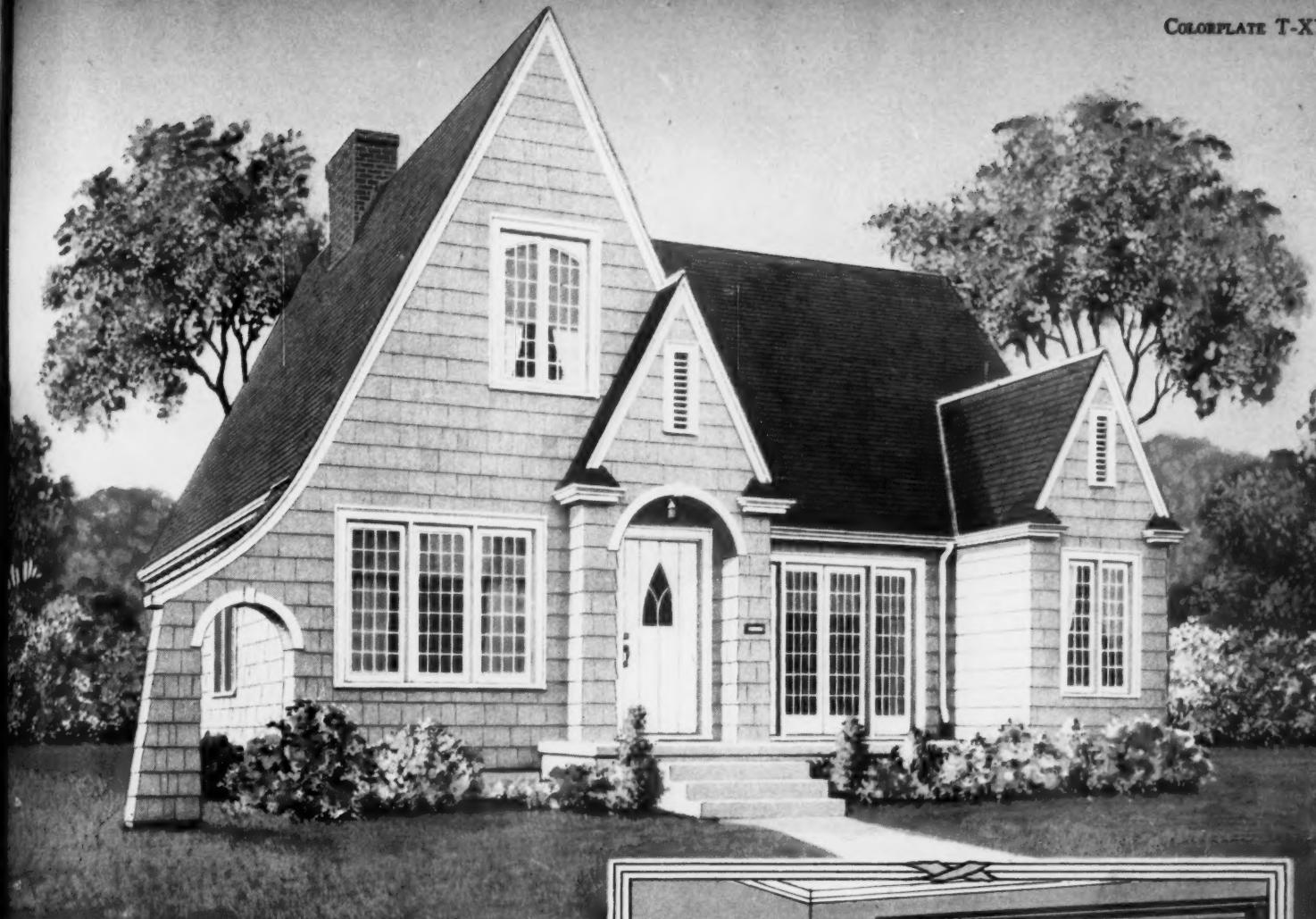




## The TAMPA

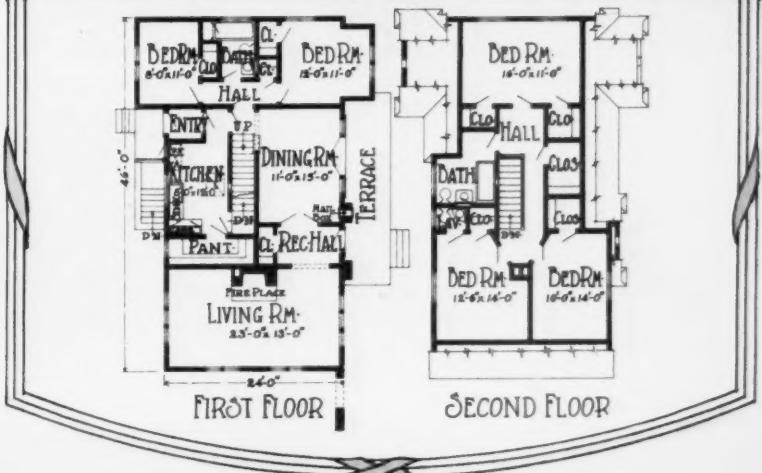
A n interesting home of Spanish style containing six rooms and bath. The tinted stucco combined with the gay awning and contrasting roof tiles makes a striking picture. Among the unique and interesting features of this design is the broad front terrace with its fountain placed before the dining room doors. Color sketch to left shows the tiled bathroom.

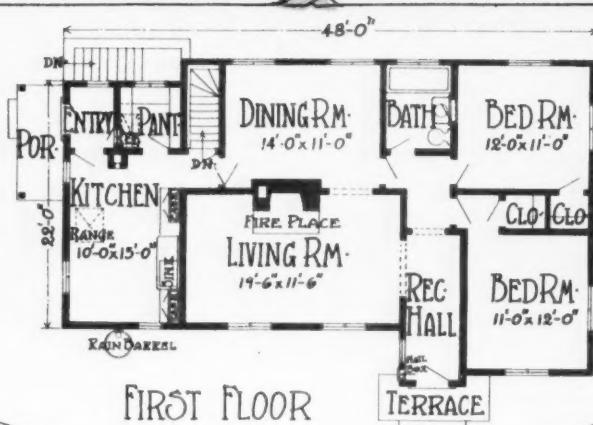
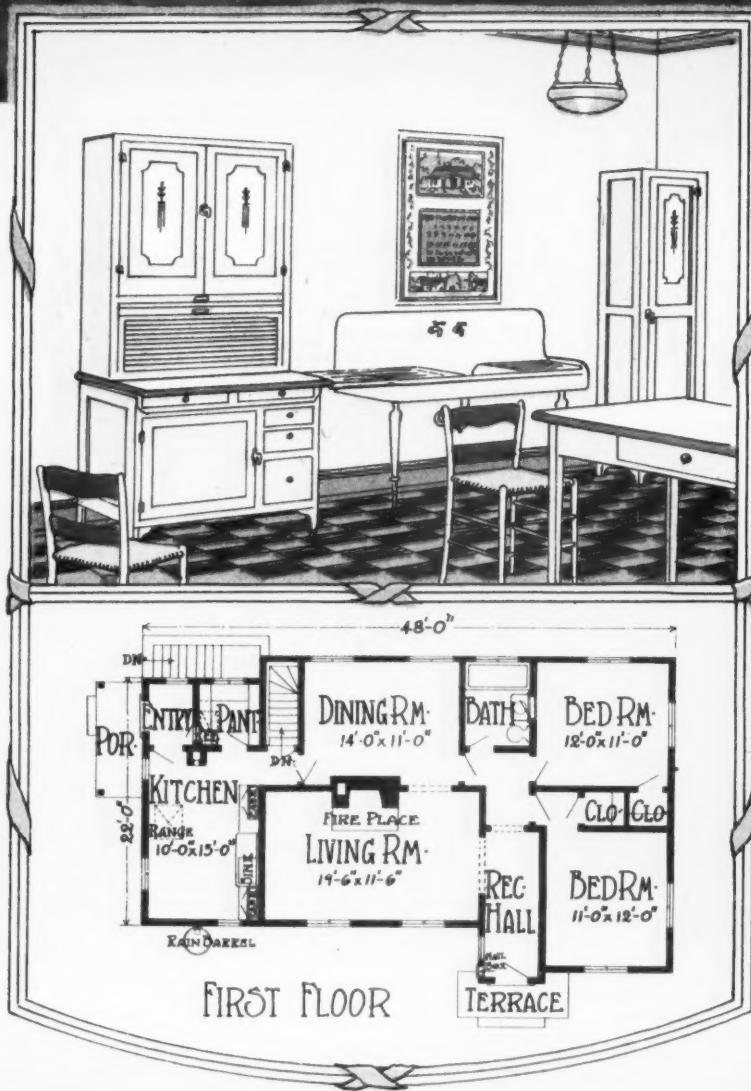
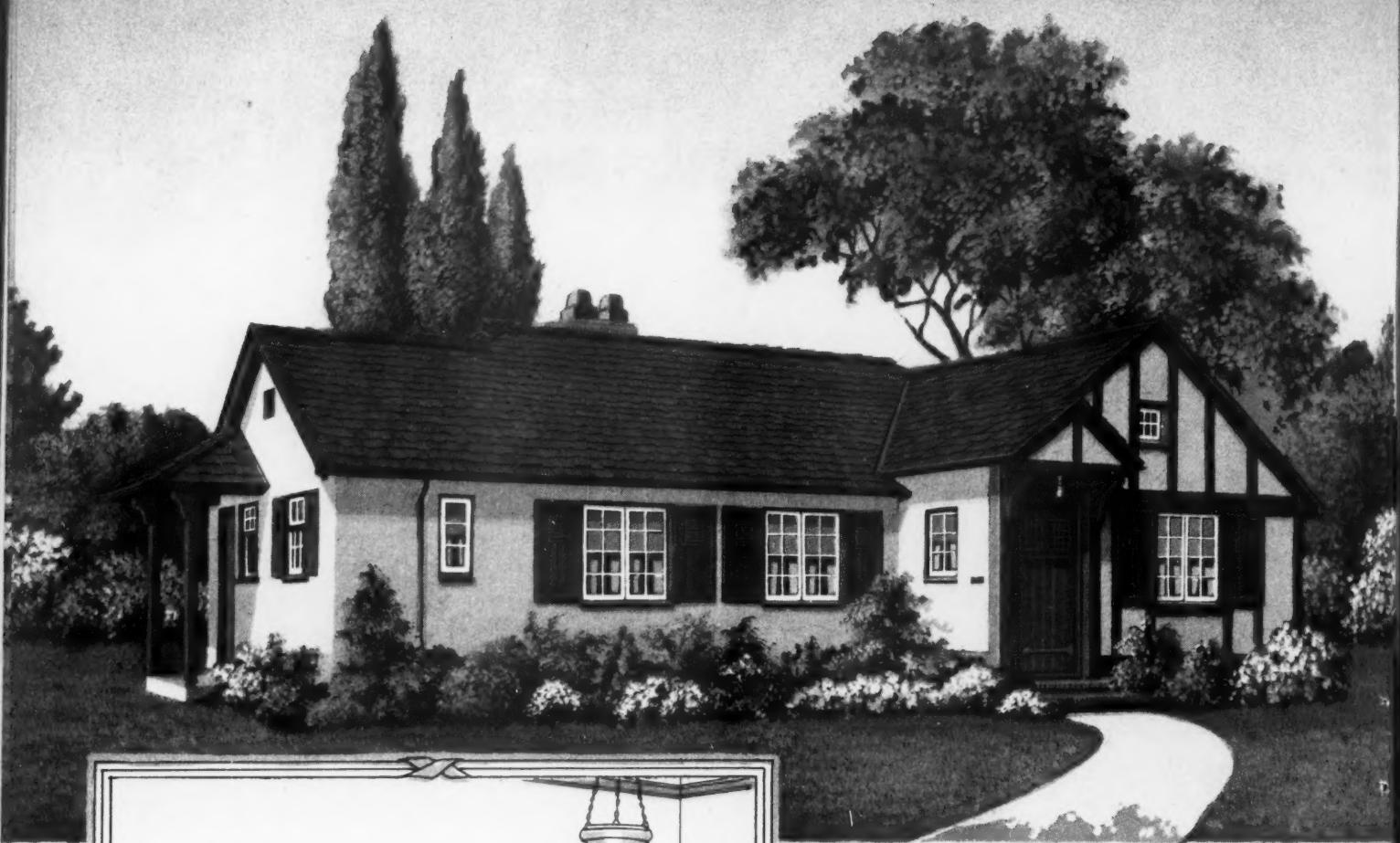




## The TOWNSEND

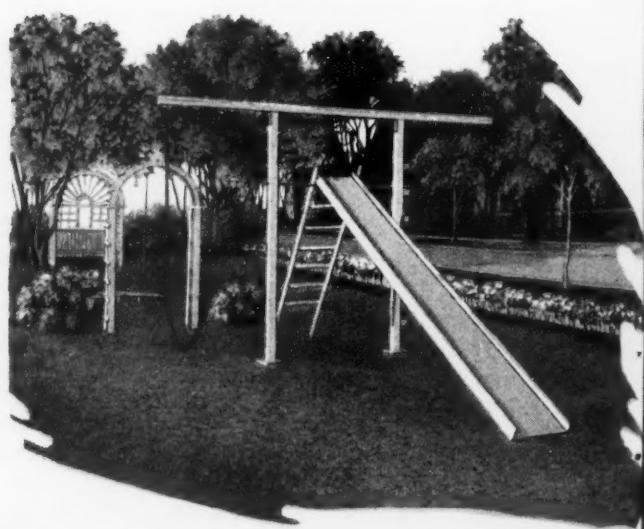
An English home with steep roof lines, the front being carried out in a graceful sweep to include the garden gateway. On the first floor are two bedrooms and bath in addition to the customary living room, dining room and kitchen and upstairs are three more bedrooms together with large bathroom and an abundance of clothes closets. Color sketch to right shows the very attractive dining room with French doors opening out onto the terrace.



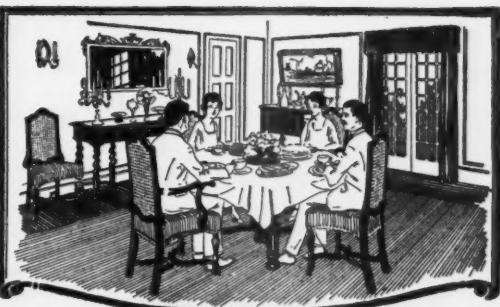


## The TIPPERARY

A MODERN home design inspired by the well remembered cot back in old Ireland. The lines are low and broad with roof rough shingled, heavy shutters for the windows and front gable panelled with rough hewn timbers. Front door hinges in the hand-forged style complete the picture. Inside the rooms are very pleasant and well arranged. Living room, dining room and kitchen are provided together with two bedrooms and bath opening off the reception hall. Color sketch to left shows the kitchen with convenient cabinets.



# OUR FRONT COVER HOME



## *A Delightful Stucco Bungalow Suggestive of Sunny France*

COMPLETE working drawings to an eighth inch scale are presented on the four pages following illustrating the arrangement and construction of this charming home. Study these plans and see how complete and full of good information they are concerning the features and refinements wanted in the modern home.

The front entrance is ornamented delightfully with molded cement and the group of casement windows lighting the high ceiled living room suggest the attractiveness of that essential part of the home plan.

Delightful and unusual as this living room is, it will perhaps have to yield first place to the dining room which adjoins it through double French doors. This dining room opens onto

the terrace, making a wonderful combination for outdoor dining in fair weather. A breakfast alcove is provided and the kitchen is a model of efficiency. Two bedrooms and a large bathroom are provided downstairs. There is another very large bedroom with bath upstairs.

This little house is of solid construction with masonry walls finished outside in stucco with a special troweled surface.

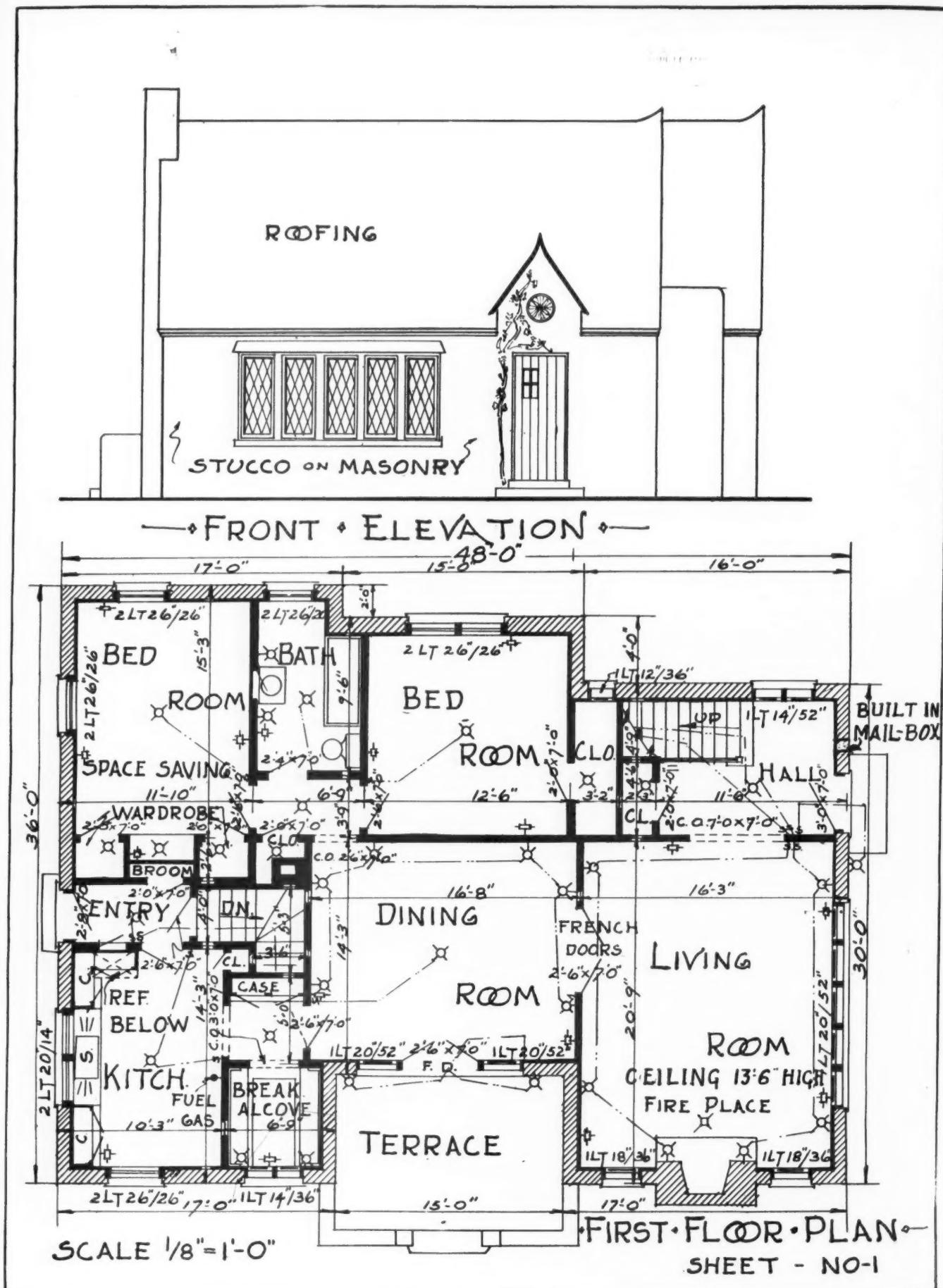
The excavated part of the basement provides adequate facilities for laundry, workshop and heating plant with storage space for either coal or fuel oil. Use well insulated construction, especially in the ceiling and roof of this house and save in comfort and in fuel cost.



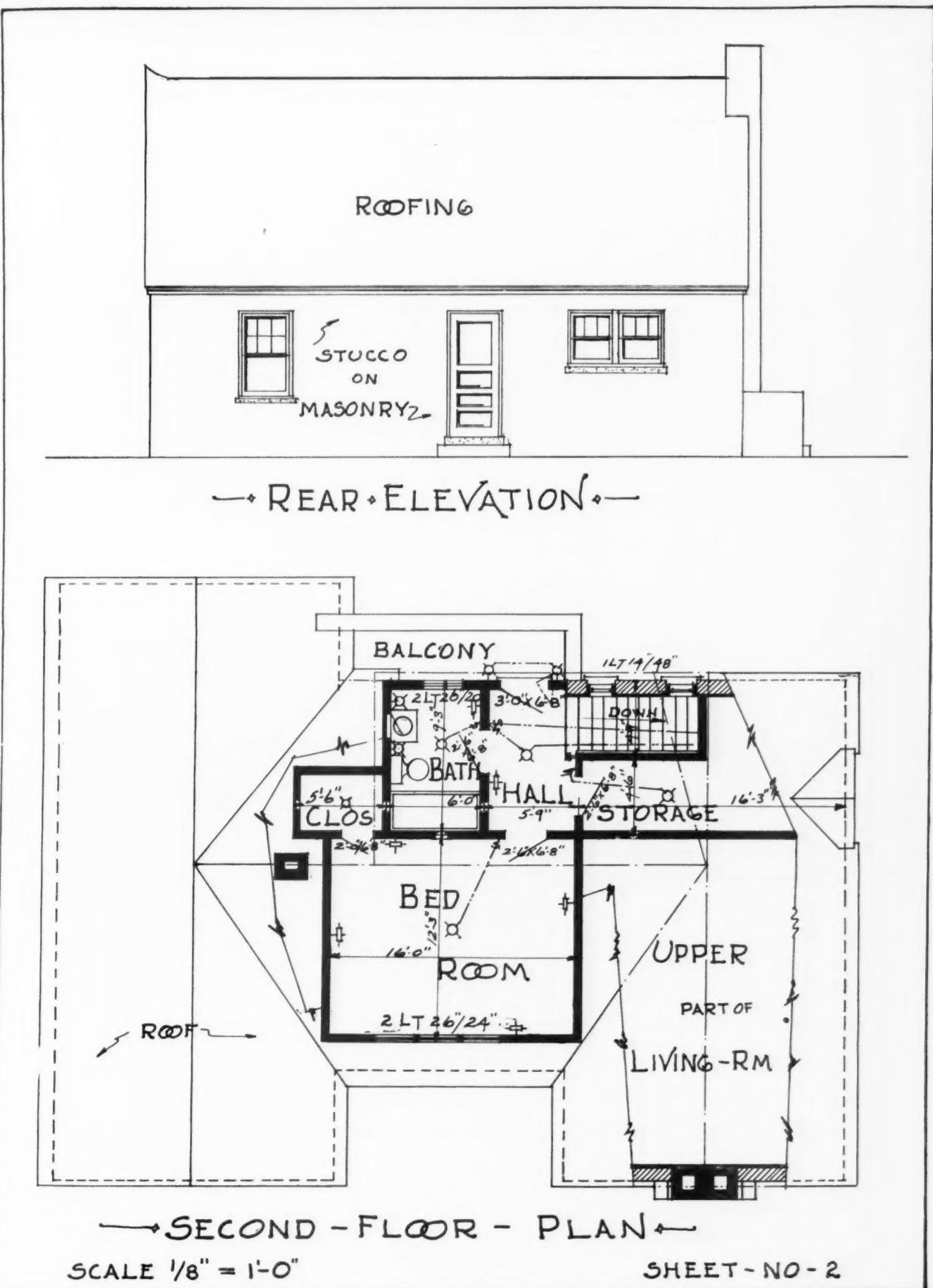
Detail of Entrance

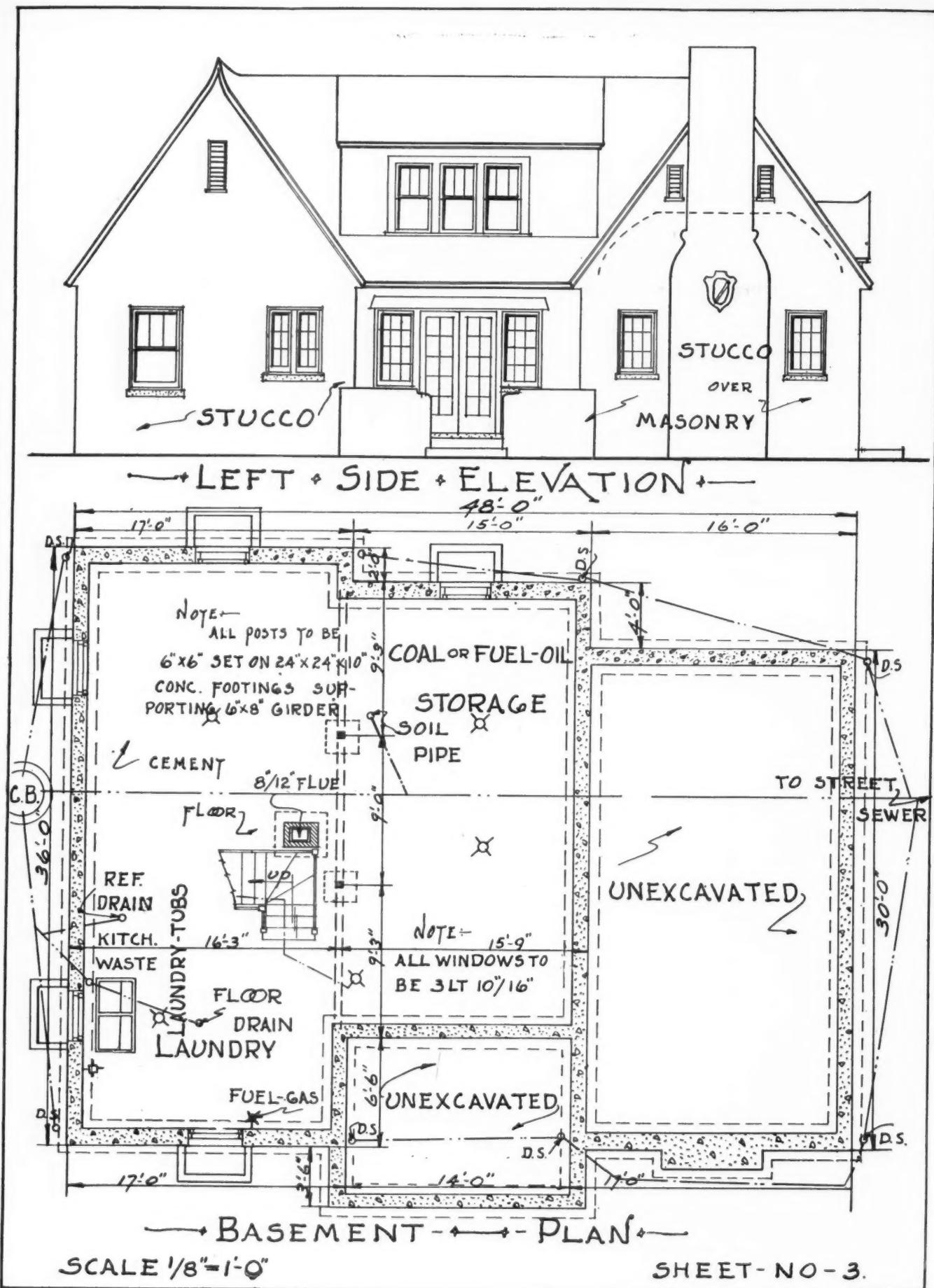


Delightful Six-Room Cottage of French Design as Illustrated on Our Front Cover This Month in Full Colors. Floor plans, elevations and details of construction are on the four pages following.



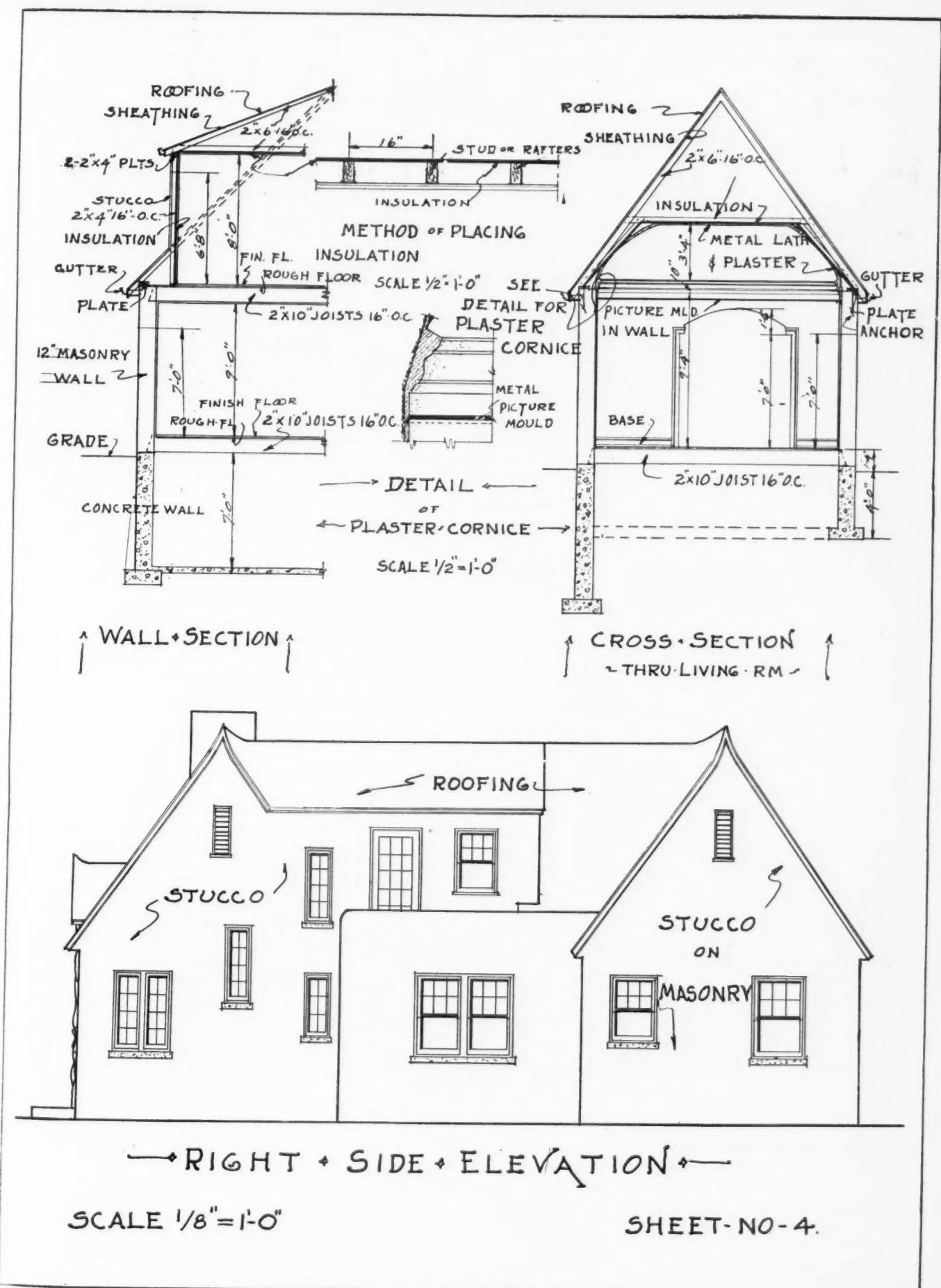
The First Floor Plan of Our Front Cover Home, Eighth Inch to the Foot, Shows the Exceptionally Convenient Arrangement of Rooms. Front elevation above shows art modeling around the front door.





Basement Flor Plan and Left Side Elevation of Our Front Cover Home, Photograph of Which Is Presented on Page 187.

## Our Front Cover Home



Right Side Elevation and Details of Wall Construction for Our Front Cover Home. The walls are of brick, clay tile or concrete units surfaced with troweled stucco.



# DETAILS OF HOME BUILDING

## Values in Siding

By V. L. SHERMAN,  
*Lewis Institute of Technology*

A WHITE village set against a background of northern pine first set me to conjuring years ago. The community was northern, and Scandinavian, and when I came on it it was all of sixty years old. Since then there have been repeated instances impressing the sturdy character of such building with all the graces which go to make up homes. It strikes me as particularly reasonable that northern folk should go into the timber for their material, but as in my case most of us forget that the timber furnishes as fine material as any could wish when the requirements are staunchness as well as style.

There is life to wood. There is a realness about it that is reflected in every man who appreciates it. When we are all gone and forgotten these frame homes will be in their ripe beauty. When a rich man dreams of a cruise it is in a shiny sloop, and he can name the different woods that go into her from the truck down. He could scarcely do better when he dreams of a new home, and if he would apply himself his ambitions would be set.

To go back. These early homes of frame, and, in fact, all homes in more remote localities were often built with a minimum amount of what we now use from the mill. Time and labor brought the actual cost relatively far above what it is today. The men who built these homes were most familiar with timber and followed it through from the axe to the last hand made shingle.

To get desired effects they must have deliberated on proportions in measurement more than on how much trim the house would stand. Economy meant plain surfaces and corners meant more joining. But their compromises brought success to the whole except where the work was heartlessly done. Wood for surface will stand a great deal of abuse in the way of coloring and cutting up, but when a home is to be frame give the wood a chance to show its warmth and pleasing appearance.

The well proportioned house with wall and roof in sympathy can be brought out by no better means than the shadow lines of the siding. These should not show like the circular stripes in a red stocking, nor should they be so broken up as to lose their purpose. They are part of the picture.

Frame houses, too, have the advantage of homogeneous structure. Perhaps because of that as well as anything else can we term such a house one of character. With the wall plates on the real builders are the carpenters, and no craftsman may be prouder of his work when he can top it off with well placed trim and nicely hung doors and windows all ready for the painter. The workman is on the job practically to the end.

The structure of a frame house is not essential here. But since permanence of structure is always to the point some notice should be given to points occasionally passed over. Lighter timbers have replaced heavy beams, much of the

fitting is done before the material comes on the job. Responsibilities in general are less to individuals and poor results more likely to follow. The first essential in the construction of a frame house, it seems to me, is fire prevention or, rather, protection. The construction which used to be more solid in weight has opened up in places.

In Fig. 1 is shown a spacing of four inches from the chimney to the stud. That space is protection against burning soot in mortar crevices. The spacing at the side assures like protection along with the added clearance in case of settling. Flues should by all means be lined if for no other reason than reducing the fire hazard.

In Fig. 2 is shown a fire stop of incombustible material which should back the trimmer. And to close the joint a metal strap at the edge of the lath and plaster. There is one sure way to prevent the spread of flames in or out of a firepot. Stop the draft. Close all openings that might allow flames to communicate. Partitions, outer walls over sills, around pipes, especially around chimneys. Don't be afraid to be foolish about it. Along with this fire stopping from the inside, we wish to say that fireproofing the roof will certainly not curtail efforts toward beautifying.

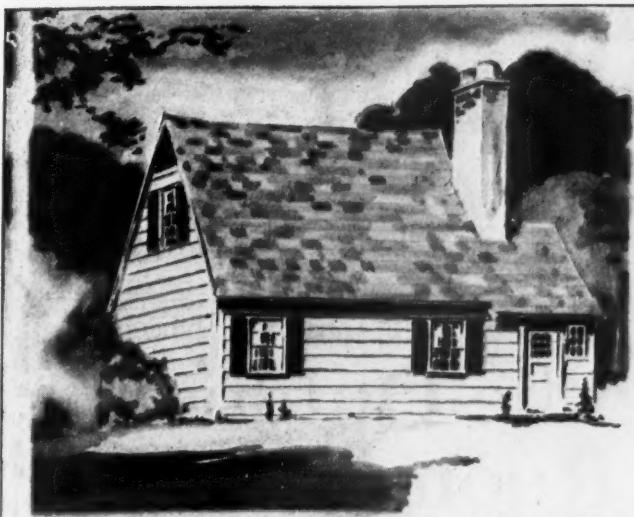
Another of the items in frame construction sometimes overlooked is proper bracing. This applies to every part of the structure and as an instance we take again Fig. 1. In closing the corner between trimmer and header we might overlook a few inches or even brace against the chimney. But a cantilever box will escape either and provide support of that small area. Like well built cross bridging, these little levers throughout the house mean a lot. It is the same difference found between ill-fitted joints full of nails and snug joints with a few.

There is no building material that will adapt itself better than good siding. I have known many houses, especially country homes, wherein stone and frame was combined in comfortable unity, sort of a natural bond. In the drawing it may be noticed that the same stone was carried from a heavy chimney out far enough to finish off a single wall. This may have been intentional but might have been expedient.

There is also that quality in good siding when properly handled and stained to attain a weather worn air that is very like the lichenized stone in its element. Such a house appears to be of the aristocracy if it looks well or a vagrant if it doesn't. A chance is taken when such an aim is taken. Take care to use the proper material for siding and as reliable a roofing. They've got to get gray together.

In making the last sketch of Mount Vernon, I was warned that the "cellar-door" ought to be explained. But that is unnecessary. The point is that whether a home be formal or cozy siding will take its place. The lines in the first type are given the lightness they should have, and a freshness without the effect of newness.

## Details of Home Building



WHITE SURFACES OF PLAIN DWELLINGS FORM A REALLY DELIGHTFUL FEATURE.



BROAD SIDING SHOWS WELL ABOVE STONE.

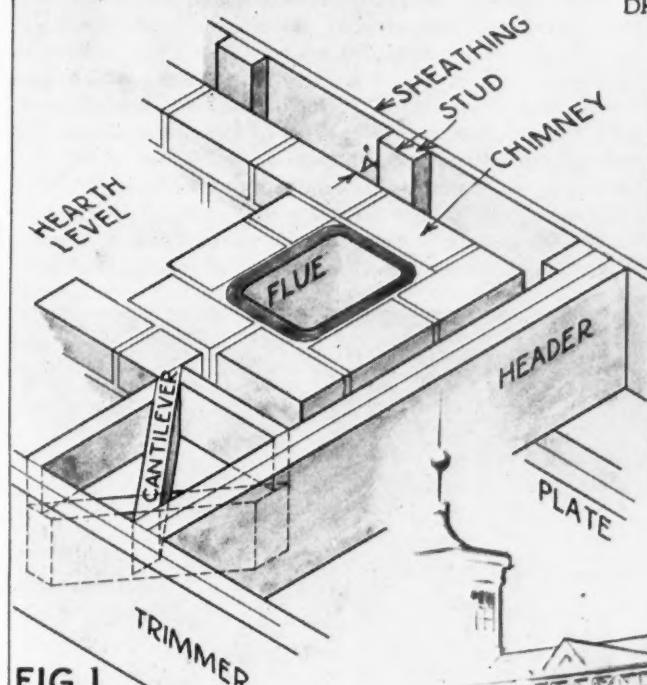


FIG. 1.  
CANTILEVER-  
BOX AT HEADER  
CORNER OF HEARTH.

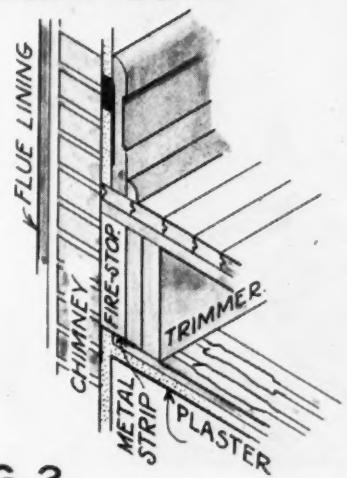
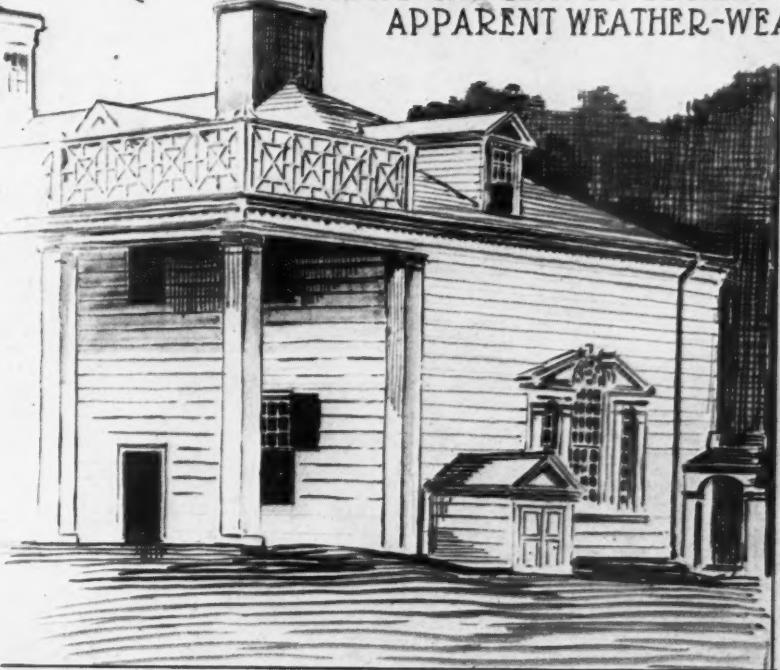


FIG. 2.  
FIRE STOPPING BACK OF TRIMMER.



SIDING IN PARTICULAR SHOWS THE BEAUTY OF REAL OR APPARENT WEATHER-WEAR.



FORMALITY OF LINE AND THE GRACE OF THE CLASSIC ARE SHOWN IN AMERICA'S OLDEST HOMES.

v. l. Sherman 4-4-26.



By F.A.Cushing Smith Landscape Architect

## Enclosures for the Outdoor Living Room

**E**VERY flower garden to be worthy of the name should have a boundary, an enclosure high and fine. It matters little what its nature may be, of what material it may be made, so long as once within the outdoor living room we feel the sense of privacy, of own-ness which our garden retreats should bring to us.

We feel that the garden to be most inviting should be closely connected to the house, and the general character of the materials used for the enclosure will be controlled by the materials used in the walls and exterior construction of the house. Thus we can be assured of a simplicity and consistency in the use of materials which cannot fail to make the entire scheme excellent.

### The Hedge-Rows

The simplest enclosure would be that natural boundary so often found in our early New England farmsteads, and even today at times in some parts of the Middle West, namely, the hedge-row. Have you ever as a child tried to climb through the old buckthorn hedge which protected the coveted cherry tree or beloved watermelon patch, only to find that nature in one of her cruel moods had sown the branches with thorns, the marks of which may even today be a permanent remembrance of true protecting enclosures.

Our flowers are seldom so rare, or our hearts so small that we need resort to such a hedge. If a hedge will serve



The Garden Wall Lends an Air of Privacy to the Outdoor Living Room Especially Necessary in This Day of Constantly Passing Traffic. Here the wall of brick, with well proportioned arch, is built in the style of the house making the house and garden seem one.

our purpose, and close clipping is desirable, a privet hedge, or even the evergreen arbor vitae or hemlock will bring us a windbreak and an enclosure against the side of which even the most tender plants can thrive.

Hemlock, when unclipped, and white pine also, make an excellent screen toward the north side of an orchard in the northern states, serving as they do as a means of stopping the drying effects of the cold winter winds, and tending to keep more equable the temperature about fruit trees with their tender buds in the spring. Too dense a hedge may not be desirable for it prevents a profusion of bloom due to the shade, and also takes with great glee most of the moisture and nourishment for many feet around its base.

Do you remember the early gardens of perennials and old-fashioned flowers with their beauties framed at blossom time with the sturdy lilac or the gardenesque rose of Sharon, or mayhap with the arching snow-laden branches of the Van Houtte's spirea and of the bridal wreath!

### Place of the Lattice

On the small lot, a lattice fence of pleasing design, covered with masses of climbing roses, wistaria or honeysuckle and its hard lines softened with greenery, seems to provide a more definite enclosure. An arch, a gate, a covered seat—these features may be worked out in connection with the lattice, if their proportions receive careful study.

Unless a lattice is an important part of the architectural design of the garden and of the residence, do not paint the lattice white, but rather a soft green which will blend with the surroundings and with the shrubs and grass which provide the background for the living room out-of-doors.

### Stone Enclosures

In this part of the country, with its flat Middle Western topography, but little opportunity is given to avail ones self of the rugged charm of the flower covered retaining wall of stone. Such a wall sturdily holds up an adjacent bank, which would otherwise plunge into and overpower the



The Dry-Wall of Rough Stone Forming a Grotto at the Center Is Effective Against Its Background of Hills.

tender flowers. Many of the boulders of New England farmsteads are now serving a purpose which the pioneers of yesterday never expected would follow the labor of their removal from the stony hillsides.

The stone in such a wall enclosure may be either laid in cement concrete, or if they are laid wide enough may be laid dry with no cement mortar. In the latter case they should be made broad and wide at the base, with the stones sloping in toward the center of the wall, and with a slight batter from the top to the bottom of the wall. In the spaces between the stones fine, well-fertilized, black loam may be filled in to provide a spot where rock-plants and vines may gain a foothold.

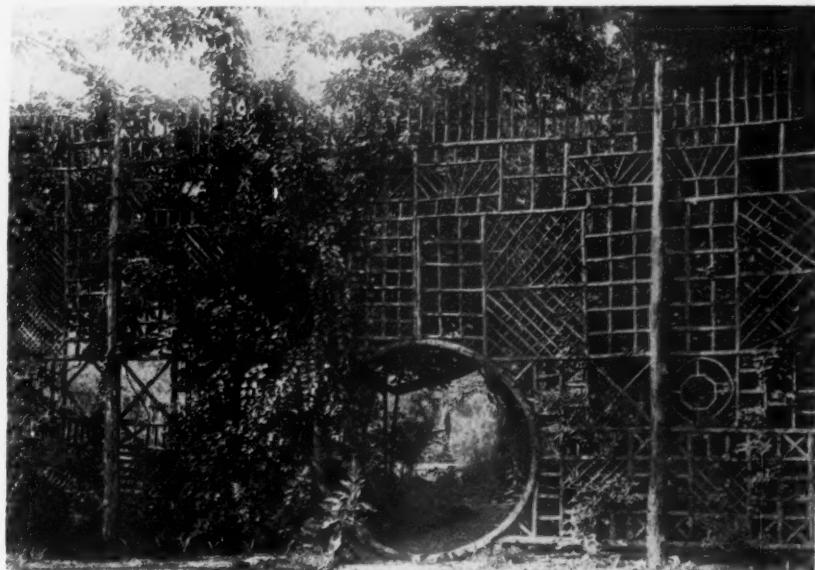
Nor need the boulders be our only stone wall for this section, for limestone with its weathered strata, or even slate in a variety of colors and thicknesses, offers a more finished effect. Such stone as is used should be handled with care, and adapted in texture, and in the design to the architectural character of the residence.

Stone may be used in combination with other materials, and where the house materials warrant it, a brick wall with a stone base, and coping may lend just the touch of formality that is desired. Cut stone ornaments in the wall surface, panels of a different material, and many other fine variations are possible with stone.

### Use of Brick Walls

Brick in its myriad of colors, its charm of texture and its adaptation to varied designs also proves an excellent garden enclosure. Be the wall low or high, pierced or solid, paneled or plain, with light or dark mortar, it proves, in all of its forms, an excellent material. Brick can be cleverly used for the terminal pergola columns, for the wall fountain, for the arch above the swinging gate, and I have seen it used with some success in brick seats and in walks.

Various patterns in which brick can be laid also give life and colorful beauty to the wall. The texture may vary from the smooth surface of the pressed brick, to the wire cut tapestry brick in its various shades and colors. Care must be taken not to have too many different kinds of brick in the wall for the effect is restless at best.



A Lattice Wall Which Effectively Serves Its Purpose and Adds a Touch of Novelty with the Round Gate Revealing a Beautiful Vista Beyond.

### Fences in the Plan

Would you achieve entire privacy from passing dogs, then build a wire fence, the wide meshes of which may be covered with the Virginia creeper, the bittersweet, or where the sunlight falls with the climbing roses. The early Colonial picket fence is also attractive about a garden, at times upon the top of a low brick wall. The width of the pickets as well as their spacing should be governed by the house design, as well as by the height of such a fence.

There is a fence on the market today made of hickory saplings, which is furnished in lengths of about five feet. The height varies from four to six feet, and the latter height will in a practical manner screen out objectionable objects and serve as a wind-break as well. The small trees are bound together with wire, and nailed to horizontal strips making a form durable in structure.

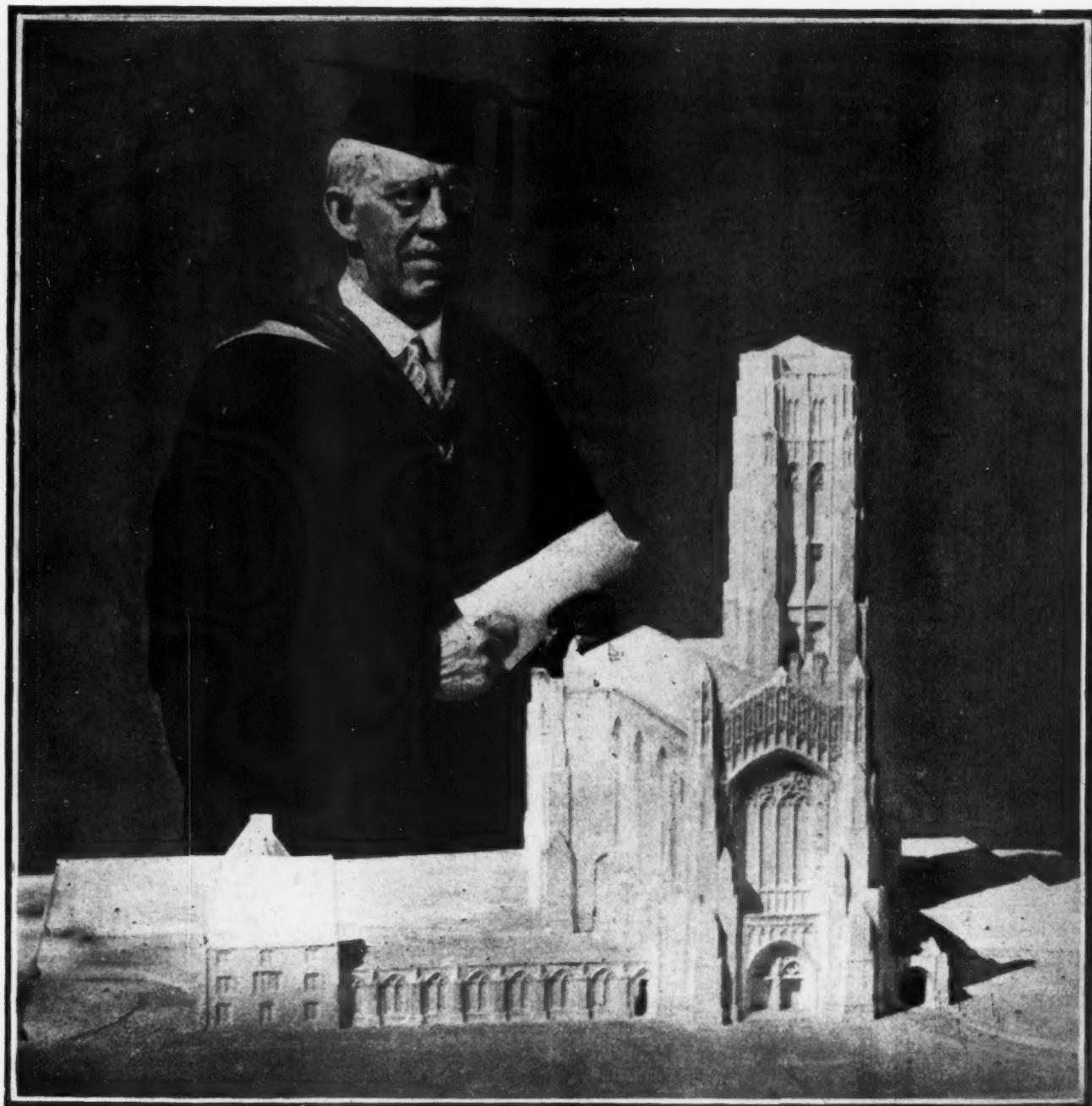
Where the space permits of a larger garden, and where the style of the home warrants its introduction, the wrought

iron fence, or grill, may be introduced on top of a stone or brick wall or alone may act as the boundary. The designs now on the market are pleasing in proportions and are not expensive. If the garden has the good fortune to have such a fence about it, then to be consistent we should also have a similar fence about the entire lot. Where the wall is solid masonry, then it is well at times to open up vistas and views through a grill of good proportion set in the spaces between the piers of the wall.

### Other Masonry Walls

A Spanish house of stucco, or even an English half-timber house, would be attractively tied to the garden or outdoor living room if the surrounding walls were of stucco on hollow tile. Stucco as now applied can be given so many delightfully textured surfaces, as well as a great variety of colors which are more or less permanent, that

(Continued to page 197)



An Exact Model of the New \$1,700,000 Chapel of the University of Chicago as Exhibited by Vice-President James H. Tufts, of the University, at the Ground Breaking Ceremony. Work on the building is rapidly progressing and it will soon form an impressive unit of this great western university campus.

# Appropriate Architecture for the Country Club



The English Style of Architecture Was Selected for the Holland Country Club at Holland, Michigan, by the Architects, Vickers & Jackson, of Grand Rapids, Who Have Produced This Handsome and Attractive Building of Brick and Stucco with Timbered Effect.

**A** MAN and his wife start out for the country club with the anticipation of a pleasant day in the country. Not only does the game of golf call them from the city's fumes, but the open porches and fresh air beckon as well. After 18 or 36 holes have been played, the refreshment tables and cool shadows allure teasingly. It is then that the comforts of a well designed club house are appreciated the most.

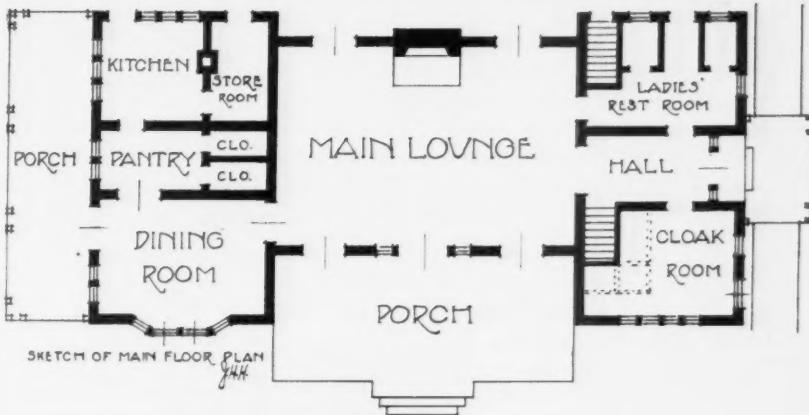
A pleasing example of this club house comfort is found in the Holland Country Club at Holland, Mich. It was designed by Vickers & Jackson, architects, Grand Rapids, Mich. It stands on a rise of ground that commands a view of a majority of the beautiful golf links of that club, and two open verandas adequately take advantage of the marvelous vista.

The architecture is English, copying the half-timbered fashion of construction, with the lower part being of tapestry brick. The sloping roofs are covered with prepared shingles, and the sides of the dormers are of wooden shingles stained brown to match the timber-work and other outside trim.

The sketch of the floor plan shows about how the main floor is laid out with the main lounge in the middle of the building and service rooms and rest rooms at the ends. A huge fireplace dominates one side of the lounge, while on the other side is the wide porch with its far-flung view.

Servants' quarters are available over the kitchen and dining room end of the building, while the rooms over the hall and rest rooms may be used for sleeping quarters for guests.

The building measures about 36 by 80 feet, exclusive of the end porches, and the lounge itself is about 36 by 24



The First Floor Plan Is Simple Providing a Main Lounge, Cloak and Rest Rooms, Dining Room and Kitchen, While Above Stairs Are Found Servants' Quarters at One End and Sleeping Rooms for Guests at the Other.

feet. The dining room is 20 by 14 feet, and, with the help of the porches, accommodates a sufficient number of tables to care for the dining wants of the club.—J. HAROLD HAWKINS.

## Landscape Architecture

(Continued from page 196)

it should receive more recognition than is at present the case.

For the informal garden, no set architectural boundary can or should be used. Here the border can be made of such a width that the taller dogwoods or viburnums of the background vie with the spirea and the barberry in assuring us that our garden treasure shall be safe. Beneath their branches the wild-flowers, bulbs and ferns can hide in all their glory in early spring.

# White Factory is a Model in Construction and Design



The San Francisco Branch of the White Company Presents a Front with Little Suggestion of the Factory. Conspicuous among other things are the walls almost solidly lined with windows, the extensive sky lights, and the ramp leading to the basement.

After several years of preparation and ten months of active construction, the most modern motor-truck and bus plant in Northern California was opened recently by the White Company in San Francisco. Typifying the growth of the truck industry and developments in the direction of continuous transportation, the new White truck building is expected to set new maintenance standards in this territory.

Built from the White Company's experience in operating fifty-four direct factory branches throughout the country, the San Francisco plant is a model of efficiency. Of its 110,000 square feet of floor space, not one foot is for display; with only 7,000 square feet for offices and sales desk room.

In design the building strikes a new note in semi-industrial architecture, being an adaptation of classical Renaissance motifs to modern requirements. The keynote is simplicity throughout with better service its purpose.

Ramps lead from Mission Street to the inspection departments where free inspection service is rendered White customers during the entire life of the truck.

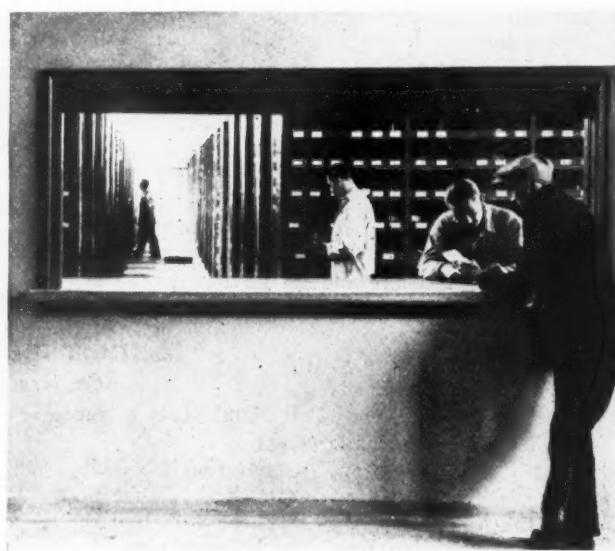
In a daylight shop covering 28,000 square feet, the White Company offers the

showplace of its plant. Here are more service innovations, time-saving machinery and short-cut arrangements than in any truck service plant in America, it is claimed.

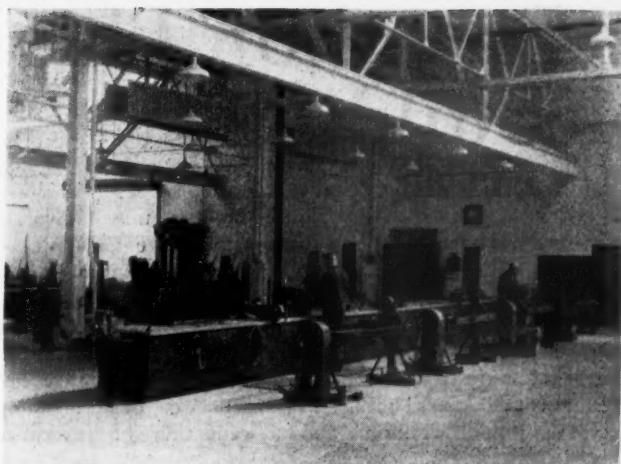
Machine equipment here consists of large lathes, eight specially constructed running-in stands, drill presses, individual motor-driven power machinery throughout. Two four-ton power cranes run the full length of the 175-foot runways and take all the heavy lifting out of the work in this modern plant.

A unique pit arrangement, pits in series, facilitate chassis work. There is one long pit 60 feet in length with six laterals. The 60-foot pit runs parallel with the west wall while numerous windows and openings in the wall provide perfect lighting and ventilation of the pit. This also enables the mechanics to stand up for working on the under part of trucks, which greatly facilitates the work of making repairs. A number of work benches have been provided along the long pit as well as compressed air connections and electrical connections.

The usual work benches have been entirely eliminated, each workman being provided with an individual work bench well equipped with tools, which enables each workman to take his



Even the Stock Room Is as Neat and Clean as the Best Office with Its Effective Lighting and Steel Bins Throughout.



The Side Wall Shown Here Separates the Plant and Inspection Departments. It is easily removable and salvageable for future expansion or change.

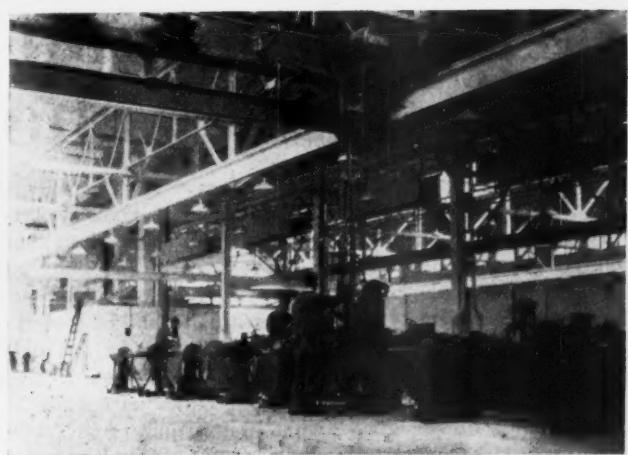
tools to the job instead of taking the job to the workbench. There are two batteries of special repair racks which are available for assembly as well as for "running in." When the engine, which has been connected up on the "running in" stand, has been run for a sufficient length of time, by means of a belt extending to a countershaft in the basement, without heating, the shaft is uncoupled and connections made to the exhaust, gasoline, oil and water pipes, and the test concluded under normal no-load running conditions.

The gasoline and oil tanks are attached to a frame which in turn is bolted to the "running in" stand. Water pipes are arranged at one end of the stand which keep the engine cool just as a radiator would. The exhaust of the running engine passes out by means of a flexible pipe which extends down through the floor and then along the bottom of the floor, which is the ceiling of the basement, to a column, follows up the column and passes out through the roof of the building.

In the center of the main floor there is a toilet and wash room housed in concrete, and ventilated through the roof by gravity ducts.

All interior walls are built of materials that are readily removable and salvageable for the purpose of future expansion or changes in arrangement. These walls are brick up to a height of about 6 feet and above this they are of metal lath and plaster. They can be easily and quickly torn down and much of the material used again in building walls in another place. A skylight runs almost the entire length of the building, being practically flat. This works very well as there is no snow to accumulate on the glass nor is there any excessive heat.

The building is perfectly lighted for day work by the extensive skylights and almost solid walls of glass. Complete artificial lighting is provided, however, by 200 watt lights with glass diffusers placed on 10-foot centers both ways. The lights are arranged in four sections so that there are no long walks when it becomes



All Space Is Supplied with Ample Daylight but There Is Also a Complete Lighting System Provided for Use in Case It May Be Needed.

necessary to turn on the lights.

The building is comfortably heated by means of steam radiators placed 13 feet above the floor on all sides of the main room and down the center of the shop.

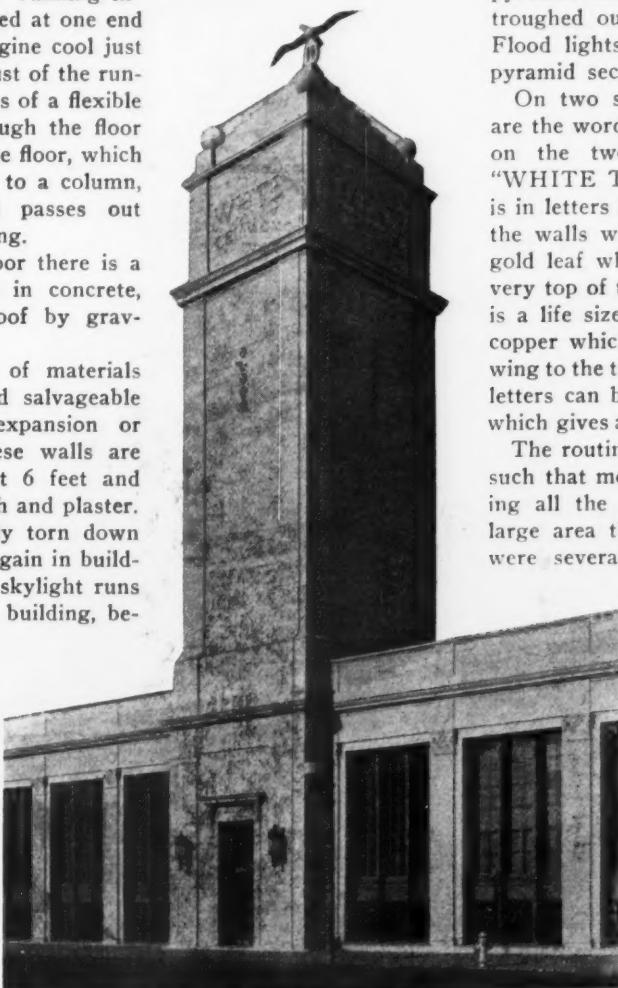
The main building is 200 feet wide and 275 feet in length. As the building is near the San Francisco Civic Center it was designed to harmonize with the Civic Center buildings. There is a tower 100 feet high which encloses a 40,000-gallon redwood water tank, 17½ feet in diameter and 26 feet deep. The tower is 24 feet square with a pyramid construction at the top which is troughed out for drainage and flood lights. Flood lights placed near the top cause the pyramid section to appear iridescent.

On two sides of the tower near the top are the words "The WHITE Company" and on the two other sides are the words "WHITE TRUCKS." The word WHITE is in letters 30 inches in height formed when the walls were poured by incised letters of gold leaf which glitters in the sun. At the very top of the tower, on a steel frame, there is a life size albatross of enameled stamped copper which is 16 feet from the tip of one wing to the tip of the other. The flood lighted letters can be seen in all directions at night which gives a great advertising value to them.

The routing of the business in the plant is such that more can be accomplished by having all the activities on one floor of very large area than would be the case if there were several floors of smaller area. The

first floor is about 6 feet above the street which permits outside lighting for the "Used Car Sales Room." The building is finished with a smooth concrete, the exterior finish being left just as it came from the boards. Very wide boards, running horizontally, were used instead of the usual method of running them vertically.

Henry H. Gutterson was the architect, Leland and Haley mechanical engineers, H. J. Brunnier structural engineer, and H. S. Tittle electrical contractor. — C. W. GEIGER.



The Tower and Main Entrance Possess a Simple Beauty and the Golden Letters at the Top Are an Arresting Advertisement.

# Grand Junction is Proud of This New School Building

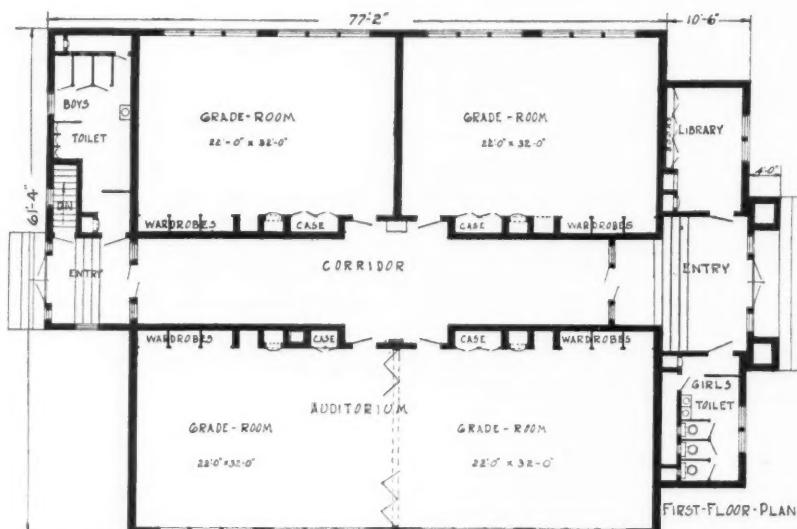
**A**T Grand Junction, Mich., they have a new school building which is a fine example of good design and good construction in the small school building, and just as evidence that the appearance of the building, as seen in the photograph reproduced below, does not deceive one, everybody connected with the building of the school and its use since completed, seems to be not only satisfied but decidedly proud of it.

The Grand Junction school was planned and built by C. C. Young, of Decatur, Mich. It is a four room school with two class rooms on each side of a central corridor. The two rooms at one side are partitioned with sliding doors so that they may be thrown together, affording a generous sized auditorium measuring 22 feet by 64 feet. Wardrobes and cases are built along the interior walls while the outer walls are almost entirely of glass, affording a generous amount of light at all times.

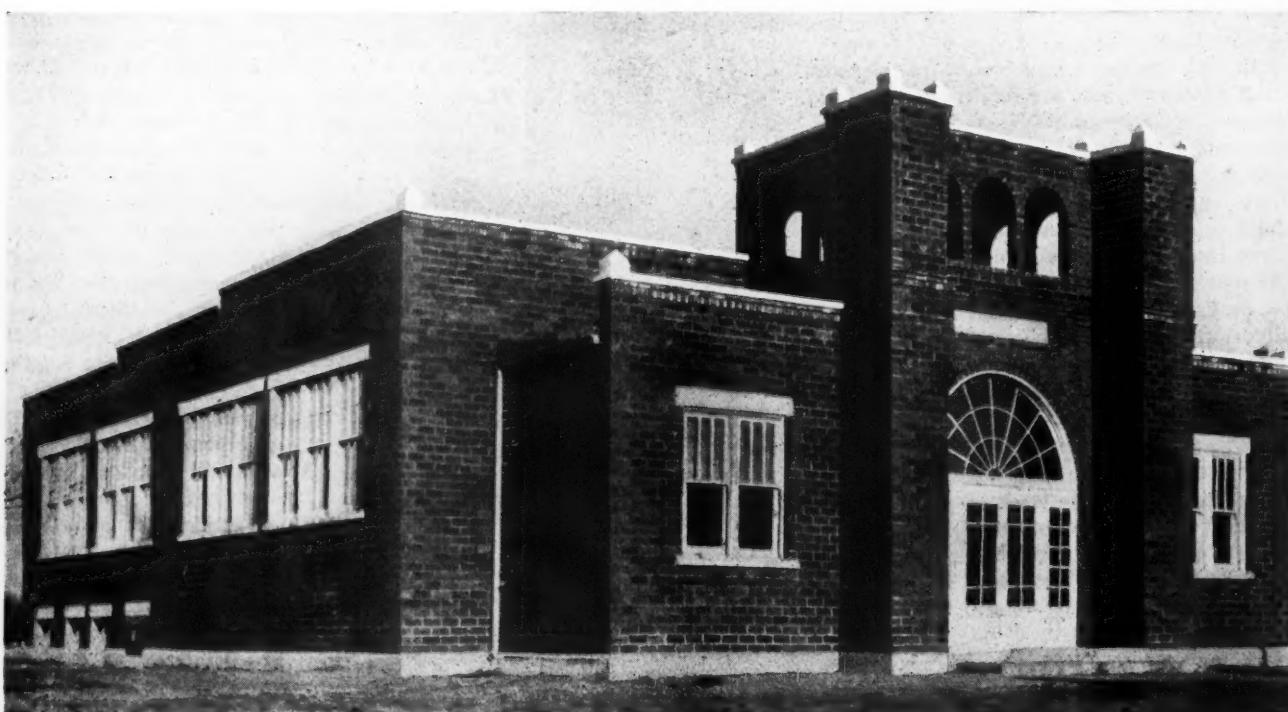
Just inside the main entrance are the girls' toilet and the library, one at either side, while the boys' toilet is placed in relatively the same position at the rear entrance. Most of the space under the building is excavated to provide for heating plant and fuel storage. An excellent sewage disposal system has been provided and was approved by the Michigan Department of Health. The plan of this system is shown on the opposite page.

In spite of the fine appearance and high quality of this building the cost was quite moderate and entirely within the range of school districts which desire a first class modern school building but are

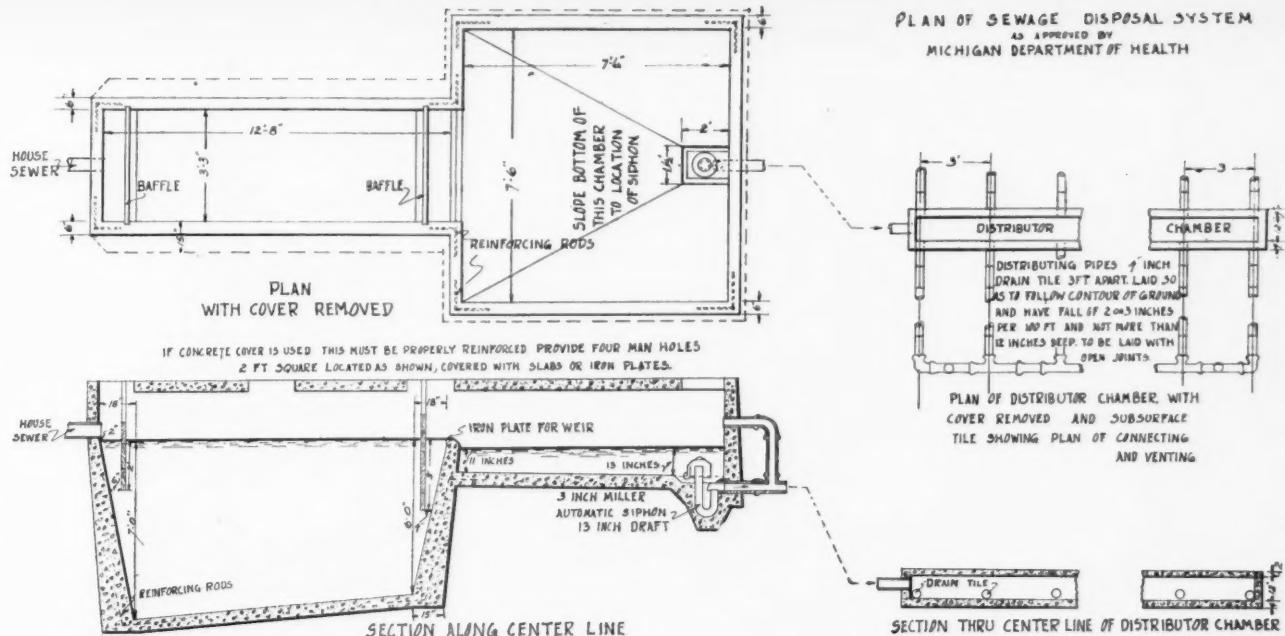
limited in the matter of available funds. It was built of vitrified, glazed tile. These hollow units have a matt-face giving much the same appearance as some of the more expensive face bricks, but each unit is of larger size than a brick. The vitrified, glazed surface makes the walls proof against moisture and vermin of all kinds and being hollow the air spaces form an efficient insulation against heat and cold. This tile is also highly fire resistant and gives both an assurance of perfect safety for the school children and a reduction of insurance rates.



The Usefulness of the Space in This School Building Is Greatly Increased by the Use of Movable Partitions Between the Rooms on One Side Making It Possible to Throw the Space Together in Form of an Auditorium.



Grand Junction, Michigan, Has a Right to Be Proud of This Fine New Four Room School Building. The credit for its design and construction goes to C. C. Young, of Decatur, Michigan, who has worked out his plans in a handsome, matt-face, vitrified tile.



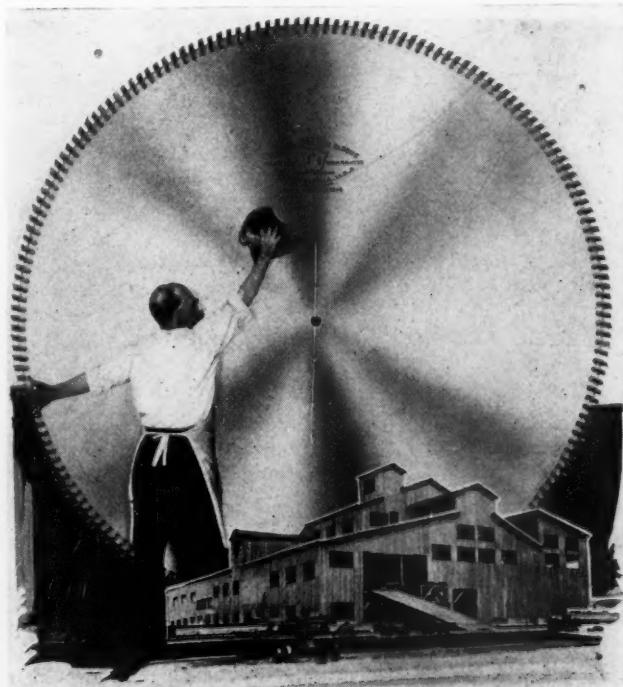
A Septic Tank Sewage Disposal System Has Been Provided for the Grand Junction School and It Has Been Fully Approved by the Michigan Department of Health. These plans should serve as a guide to others required to meet the same sort of a situation.

Construction with these tile units is inexpensive as is shown by the statement of Mr. Young, who says, "We saved 20 per cent of the wall cost as compared with brick and have a better building. I have never been more proud of any job." Further proof of the economy of this construction comes from a member of the school board

who expresses complete satisfaction with the appearance and economy of construction and adds that the building is proving a great fuel saver on account of the insulating effect of the hollow walls. This man is very enthusiastic and says that Grand Junction believes it has the finest four room school in the state.

### World's Largest Saws

WEYERHAEUSER Timber Company recently purchased from Henry Disston & Sons, Inc., the two largest circular saws ever manufactured. They are in use in the new mill the company has constructed at Everett, Washington.



Compared with the Hand Saws, of Not so Many Years Ago, This Giant Saw Is a Splendid Example of What Modern Power Methods Have Done for the Building Industry. It is 9 feet 2 inches in diameter and weighs 675 pounds.

These giant saws are 110 inches in diameter, 9 feet 2 inches from rim to rim. Each saw contains 190 teeth and weighs 675 pounds.

The saws will be used by the Weyerhaeuser Timber Company to cross-cut Pacific Coast hemlock into regular log lengths. They are capable of cutting 48 inch logs at the rate of 112 cuts per hour. The rims of the saws in operation will travel at a speed of almost two miles per minute.

### Here Is the Correct Price

IN the advertisement of Ralph M. Kennedy, 111 N. 7th Street, Philadelphia, Pa., on page 612 of the April issue of AMERICAN BUILDER, the price of one of the Kennedy Utility Saw models was listed as \$20.48. The price of this machine is \$25.00 and the listing of the wrong price was due to an error in printing.

### To Promote Southern Pine

AT their last convention the members of the Southern Pine Association decided, by a unanimous vote, to raise a special fund by voluntary assessments of two cents per thousand feet on their lumber production and shipments. This fund will be used for the energetic promotion of the merits of Southern pine.

### Architect of December House

THE beautiful English type home illustrated on the front cover of the December, 1925, AMERICAN BUILDER and which has been so much admired by our readers was designed by Otis Josselyn Fitch, architect, Platt Building, Portland, Ore., as the residence of Mr. Edw. E. Cohen, Culpepper Drive, Portland. Shipley and Snashall were the builders. This information was not available at the time of publication and the Editor is very glad to give this belated recognition to these men for this fine piece of work.

# Efficiency in Using the Power Saw for Framing

## Article No. 2—Piece Billing the Rafters

By JOHN T. NEUFELD

*Editor's Note.—The first article on this subject was published in the April issue of American Builder.*

WE WILL next take up the subject of piece billing the rafters for a hip roof. The first illustration shows an isometric view of a hip and valley roof. This illustration is given to show the different parts as they are framed together so that we may better understand the framing detail given on the next drawing.

We will not attempt to show how the length of rafters is obtained as this is a separate subject in itself. Our purpose here is mainly to show how the lengths and cuts of a rafter should be indicated on a piece bill so that the men running the power saw may cut the rafters.

It is best to draw the framing detail as shown in the upper half of the second illustration. This framing detail consists merely of a plan view of the roof; it does not have to be drawn to any particular scale. If the detailer is a good man at sketching, such a plan may be drawn up without even the use of a scale or T-square. This plan detail will help very much in figuring the lengths and cuts for the rafters. On this detail each different rafter should be given a letter or number and a corresponding letter should be used on the piece bill.

The first rafters to be figured are the common rafters lettered (D) in this case. A sketch is made of the shape of the rafter and the length is indicated by notes. The cuts may be described by giving the numbers on the square that will lay out the cut or by giving the degrees of the cut. There are a number of tables published that will give the angles of all the different cuts in degrees as well as in numbers on the steel square. Such tables are very convenient for work of this kind.

The men operating the saw may use bevels or pattern boards to set the saw blades at the correct angles. Different machines will have different devices for setting the saws or getting the required angles. After the saw is set to a certain angle all the rafters having that same cut should be cut in order that as little setting as possible is necessary.

The second set of rafters to be cut are the hip rafters. These have different cuts and are generally made of heavier material than the common rafters. At the upper end of the hip rafters a double side cut is required. This side cut is also indicated by numbers on the square and also a top view of the rafter. In detailing or showing these pieces on

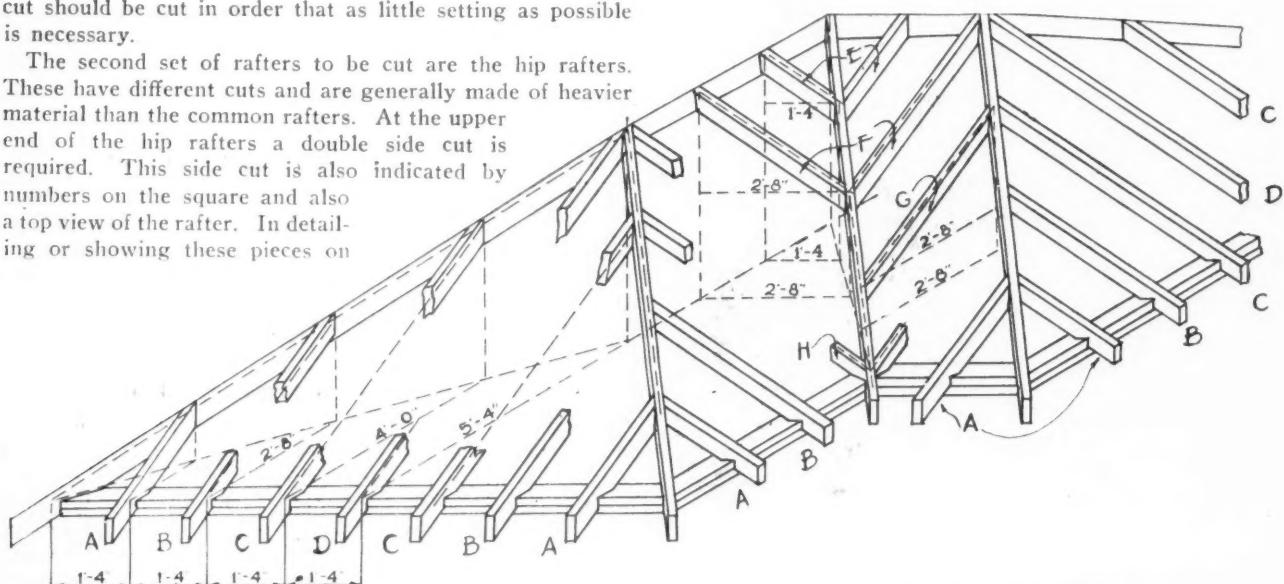
the piece bill, the detailer should not hesitate to make a few extra details or notes as it will help the cutter very much.

The hip jack rafters A-B-C are detailed in the upper right hand corner of the piece bill. As they differ only in length, only one sketch is made for all of them. Note that a side view and top view is shown and the plumb and seat cuts and also the side cuts are specified. Different dimension lines indicate the length of the different pieces and also the number of each kind.

Attention is called to the first two dimension lines and to the notes directly above them. The first reads "4 pieces 4 feet  $9\frac{1}{16}$  inches (C)." The second reads "4 pieces—DO—reverse side-cut (C)." This means that the first set of 4 jack rafters have a side-cut as indicated by the sketch while the second set of 4 pieces have a side-cut of the same bevel, but reverse. This can be better understood by studying the plan view as it will be seen that for each hip there are two sets of jack rafters with opposite side-cuts. The word (DO) means "ditto," that is the lengths are the same.

Note also that only the rafters that have the same kind of cuts are shown with one sketch. Thus a sketch is required for the common rafters, for the hip rafters, for the hip jacks, and for the cripple jacks. Wherever the cuts have a double bevel or what is termed a side-cut, both a side and a top view of the rafter is given.

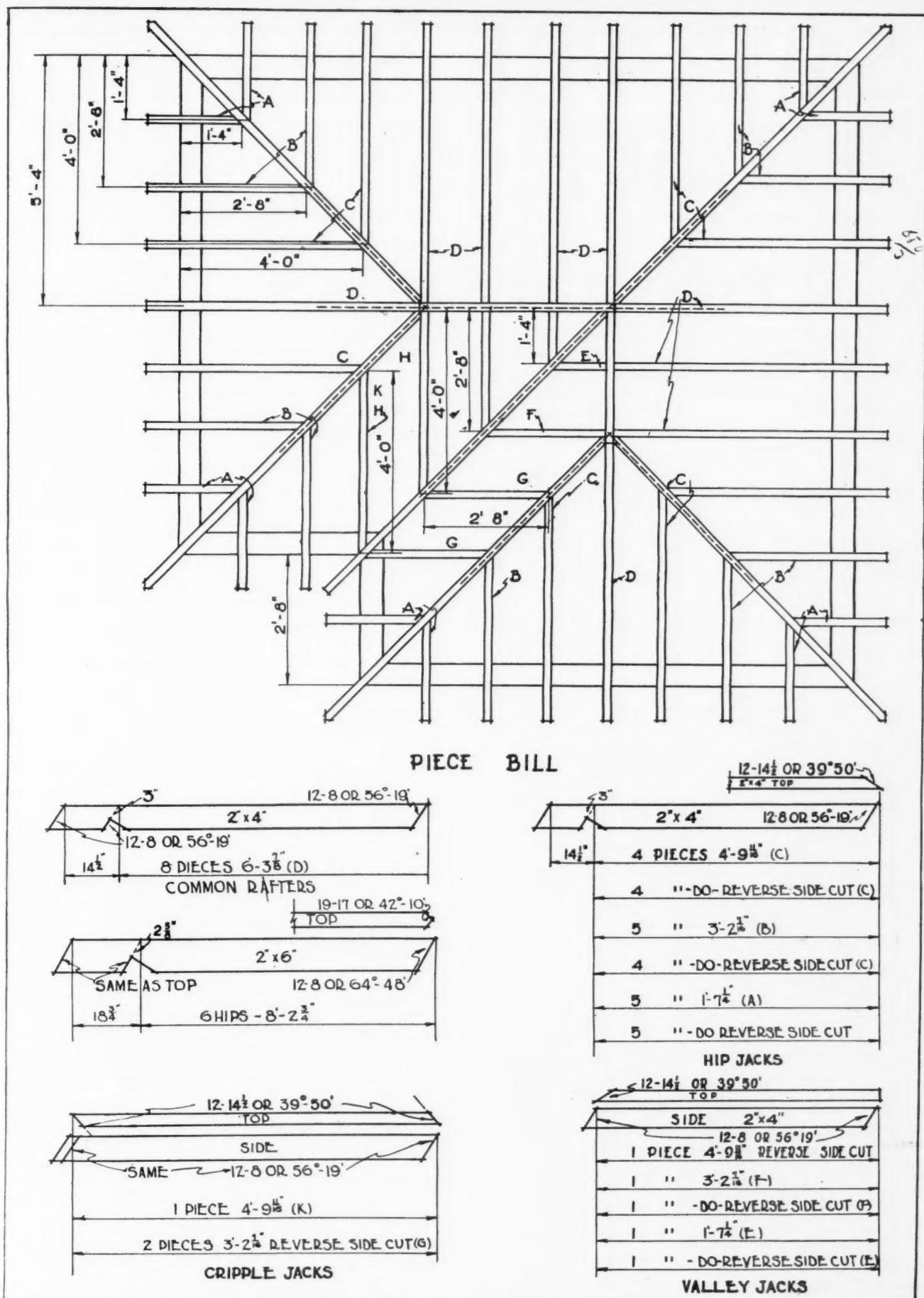
If rafters are detailed like this on the piece bill there will be no trouble in having them cut correctly. The labor saved by cutting with the machines will offset any reasonable amount of time spent in figuring out the lengths of the rafters and detailing them on the piece bill. The U. S. Government has set a good example in their construction work by requiring that on certain large jobs all rafters must be cut beforehand.



Isometric View of Hip and Valley Roof Showing the Different Parts as They Are to Be Framed Together. It is to be used in connection with the framing detail and piece bill on next page.

## Laying Out Roof for Power Sawing

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Framing Detail and Piece Bill for Hip and Valley Roof. A sketch made up in this way is of great use in drawing off a piece bill, so that all dimension lumber may be efficiently cut at the power saw.

# SAVE THE SURFACE DEPARTMENT



## Well Protected Summer Cottages

A SUMMER HOME used to be considered the monopoly of the very rich, but every builder knows that an attractive, comfortable "vacation home" can be built for the average person at small cost. Nearly every town has its local summer resort. The builder can benefit by this situation, augmented, as it is, by the almost universal desire to own a summer cottage.

The old fashioned type of inexpensive summer place was a dull and dreary shack, crudely put together and absolutely innocent of the conveniences that city and town dwelling people have come to consider necessities. Usually this type of cottage was left unfinished, inside and out, or else it was given a hasty, inadequate coat of paint. No matter how cheaply constructed such a cottage is, it is expensive in the long run.

Instead of saving on the family vacations, their owners find themselves burdened with uncalled for expenditures. As new cottages, those of more modern type are erected

nearby, theirs becomes less and less desirable. Again, no woman enjoys a vacation that involves harder work with few results. Every woman likes cheerful, attractive surroundings.

It is far more economical for the owner, and far more advantageous for the builder, to put up an attractive summer cottage that is well painted without and well finished within, than otherwise. The summer place is usually left to shift for itself during the harsh winter months. If it is unpainted or inadequately painted, it is apt to deteriorate rapidly during this period.

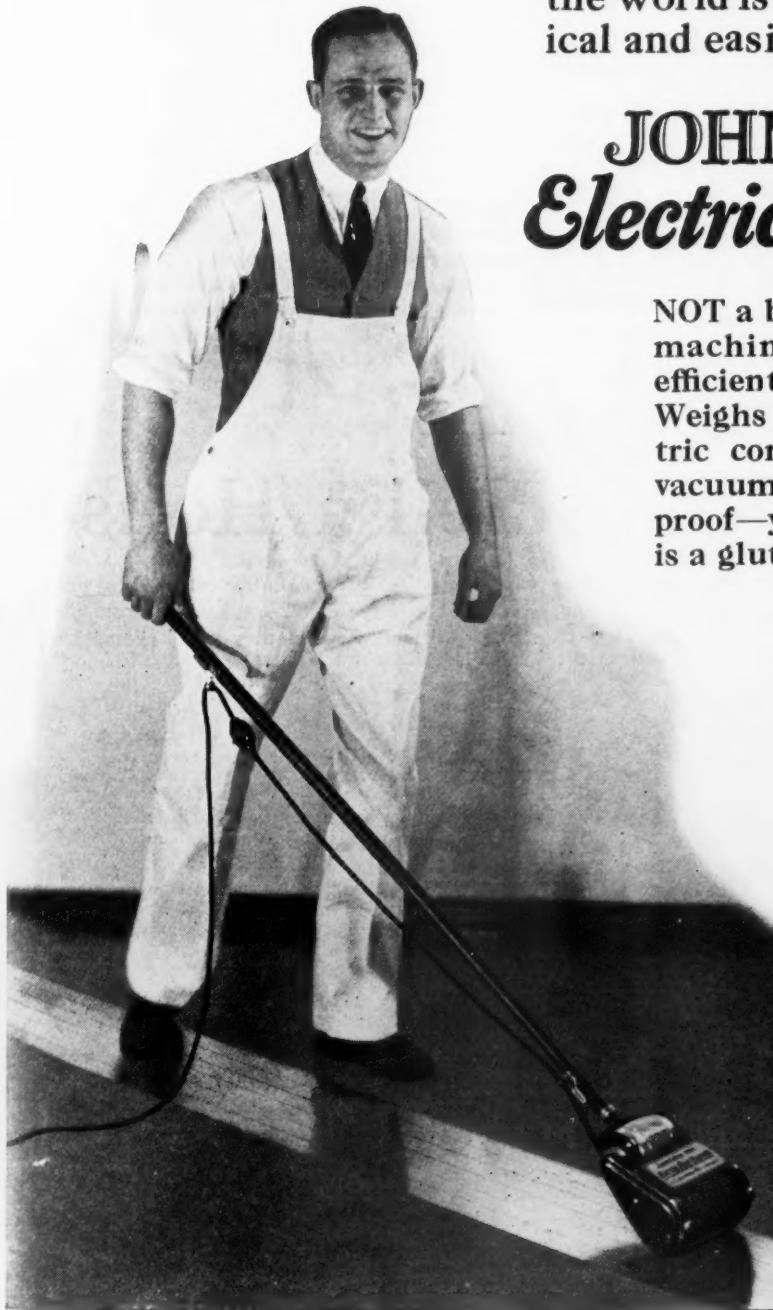
An attractive interior finish for the cottage is wallboard, painted bright, cheerful colors. Of course, no one wants to go to the expense of putting hardwood floors into a small summer home, but this does not mean that they need be ugly or hard to clean. Floor paint is the solution. Soft colors are available in this medium and much of the charm of a little summer place may emanate from this



The Comfortable, Attractive Living Room of a Summer Cottage Recently Erected at a New Jersey Summer Resort. Painted walls and woodwork and well-varnished floors make it cheerful and easy to keep clean.

# Finish Floors the New Electric Way

**FLOORS SELL HOUSES.** They are literally under your prospect's feet the minute he enters the door. Don't show him a dull lifeless finish---nor a brittle glassy surface that he treads gingerly for fear it will scratch. Show beautiful, serviceable, saleable WAXED Floors. The most distinctive, desirable and practical floor finish in the world is now the most economical and easiest with the new---



## JOHNSON'S WAX *Electric floor Polisher*

NOT a big cumbersome piece of expensive machinery—just a wonderfully handy, efficient TOOL that every builder needs. Weighs only 9 lbs. Works from any electric connection. Easier to use than a vacuum-cleaner. Sturdy, durable, trouble-proof—you can "treat it rough". And it is a glutton for work.

You Can Get This Polisher

# FREE

*Contractors and Builders can get this new Johnson machine ABSOLUTELY WITHOUT COST. Ask for details of our Special Offer. Clip this coupon to your business card or letterhead and mail it NOW!*

S. C. JOHNSON & SON, Dept. AB5, Racine, Wis.  
*"The Floor Finishing Authorities"*

Please send details of your FREE offer on the new Johnson's Wax Electric Floor Polisher. My name and address are given on attached letterhead.

Signed .....



One of the Bed Rooms in a Labor-Saving Summer Cottage. Wallboard is used throughout the interior.

sort of unusual decorative treatment. A coat of varnish over the paint finish will make it sturdier and quite impervious to the wear-and-tear which cottage floors alone are subject to.

Of course, the living room should have a fireplace. This is both attractive and useful, since damp days and chilly nights occur frequently. The woodwork should be well painted. An attractive color scheme for a cottage living room is pale green for the walls, cream for the woodwork, and blue green for the floor.

Instead of a dining room, a breakfast nook is both con-

venient and inviting. Bright colors, such as blue and yellow or black and orange, or green and coral, can be used here to good purposes. In the bedrooms, too, which should be as numerous as possible in the summer cottage, unconventional color schemes may be indulged without offending. As a matter of fact, they add considerable charm, since most people consider their summer homes as a sort of playhouse for adults, and love to furnish them with quaint and unusual furniture that would be entirely out of place in their more conventional city homes.

As one woman said, after building her first summer place, "I don't want my vacation hampered by household drudgery. I don't want to have to live in a dreary, shabby house during the best months of the year. And I don't want to have to go to the expense of repairs every spring." Consequently she saw to it that the interior of the cottage was well painted in cheerful colors.

Smooth, painted surfaces, are easy to clean and are washable, so that they may be kept fresh at a minimum of expense and effort. A sound, well painted structure will weather the wear-and-tear and exposure that is the fate of the summer home. Such a cottage is an excellent investment for the average person, since, after the first expenditure, the cost of vacations is reduced to almost nothing. It is also a good investment for the builder, who, if he will tell his prospects of the marked advantages of such a summer home over that of the old type, will have to his credit, not a rickety-looking shack, but a fresh, sturdy, comfortable cottage that will wear well.

## Lattice Work Helps Sell a House

WHETHER it is elaborate or very simple, some white painted lattice work is a great asset to a house.

The smallest garden is improved by a pergola, garden seat or swing, a charming arbor or a wicker gate. Houses, after all, are much alike. It is their setting that brings out their distinction. Extra touches make a house more desirable and more valuable. They immediately suggest a lovely garden to the home seeker, and, in fact, they are often the means of clinching a sale.

Too many people who are engaged in the supposedly prosaic business of selling, forget that the appeal to the imagination is far more exciting and productive than the mere appeal to common sense. This is a practical age and so we demand practical things when we buy a house—sound structure, tasteful decorations, good design and so on—but no one is immune from the added appeal of so romantic a thing as an arbor for potential rambler roses or a wide boarded picket fence that mutely suggests the planting of a row of hollyhocks nearby.

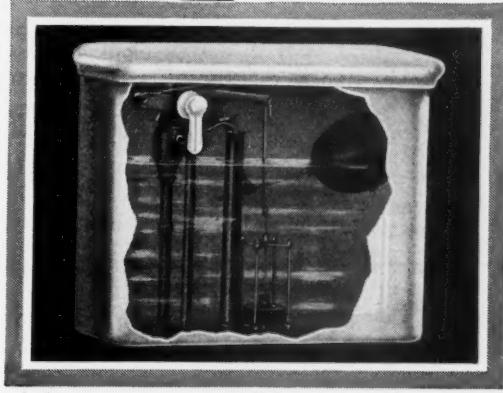
Some of the utilitarian portions of backyard scenery may be improved by lattice work. It is always charming to have

the service yard, with its kitchen entrance, clothes lines, and, perhaps, ash and garbage cans, screened off from public view by a high lattice. And clothes poles themselves,

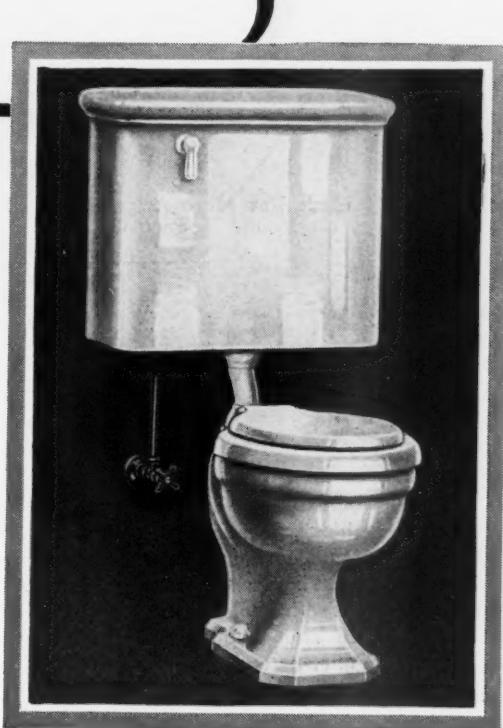


Dressing up the Backyard Is a Piece of Strategy on the Part of the Builder. Here is an arbor seat and lattice fence which add to the desirability of the home.

# Quiet —



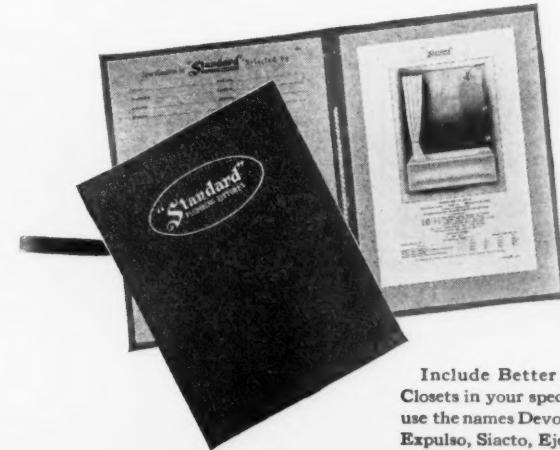
THE "Standard" Water Control is a product of years of research and testing. Every part was developed with special care. The rubber float ball, the metal castings—all materials are the very best. With principal working parts above water, deterioration is prevented and adjustments made easier. Pictures show the popular "Devoro," one of the Better "Standard" Closets.



## speaks for your houses

Haven't you had sales suddenly slip through your fingers because of something that had passed unnoticed on previous inspections of the house?

That is the sort of thing you can help guard against in bathrooms by using the Better "Standard" Water Closets.



Include Better "Standard" Closets in your specifications—use the names Devoro, Purimo, Erupto, Siacto, Ejecto.

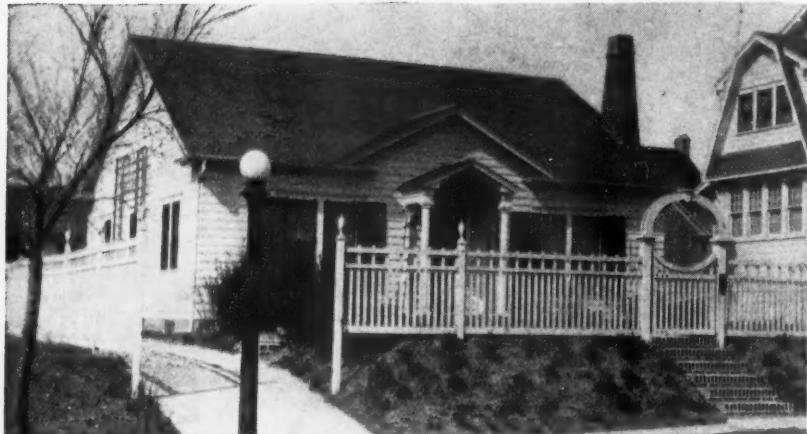
The quiet action of these closets is a selling talk in itself that satisfies the most particular home-buyer.

This is achieved through striking improvements in the Water Control. Almost noiseless in operation, the "Standard" Water Control also insures more efficient sanitation and more years of service. It is built to last.

Write for "Standard" Catalogue

Standard Sanitary Mfg. Co.  
PITTSBURGH

**"Standard"**  
PLUMBING FIXTURES



This Small House Is Made Far More Attractive by the Lattice Fence and Round Topped Gate.

for all their homely purpose, may be turned into delightful lattices without hindering their work in the world a particle.

Where an oil burner is installed, a fuel tank is usually necessary. This is an unsightly object at best, but if a lattice is built around it, it becomes an asset to the appearance of the backyard instead of a blot on the landscape.

Be sure that all outdoor woodwork of this type is well painted, since one of its chief charms is its fresh whiteness. Lattice work or fences that come in contact with the ground should be treated against rot, or else tarred and set into concrete, and, of course, they should be painted to prevent weathering and decay.

## Interesting Woodwork Treatment

POPULAR prejudice has it that distinction in home decoration is a matter of vast effort and expense. Not so. It is usually a matter of emphasizing what is ordinarily overlooked.

These pictures accompanying this article show what so simple a device as a black line will do for interior woodwork. Woodwork frames a room. It is built on straight, geometric proportions. There is nothing vague or retiring about a door or a window frame, yet most people endeavor to disguise the severe and definite lines by painting it in as ambiguous a manner as possible.

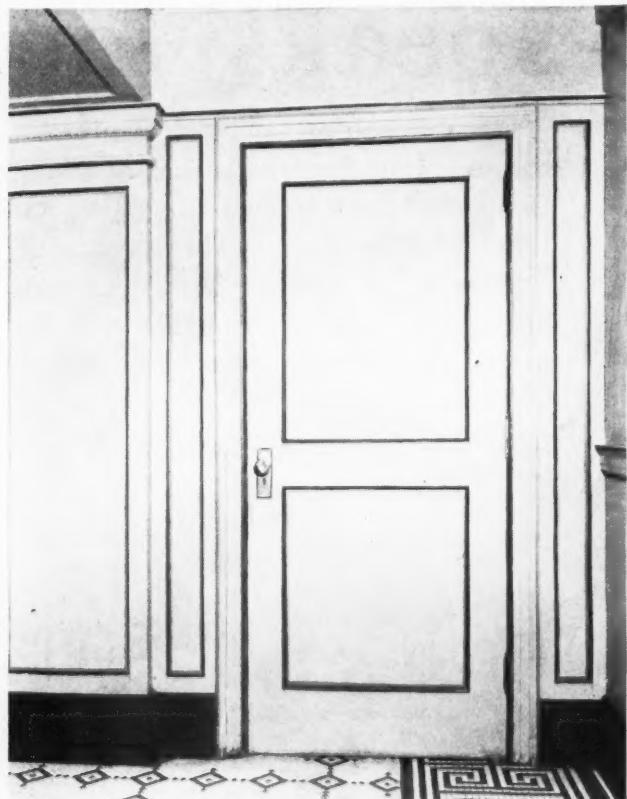
There is nothing startling about the woodwork treatment shown here. After the first interested glance on entering the room one forgets it. There remains, however,

a certain almost subconscious satisfaction in the clean line and sharp definition of the woodwork.

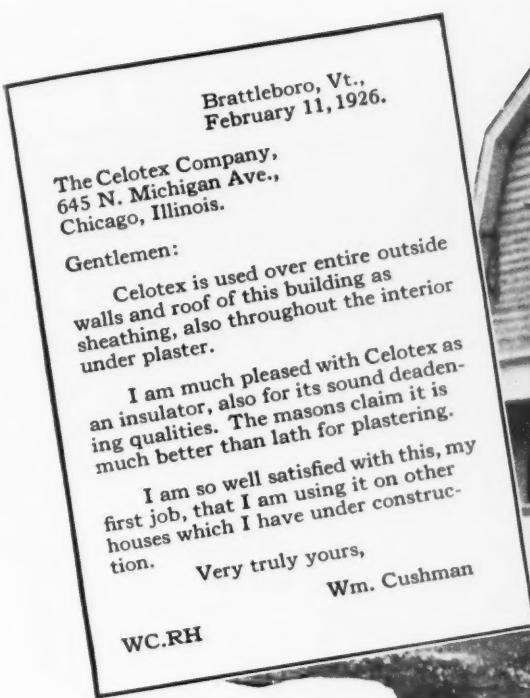
This treatment is as appropriate in a small house as it is in the beach front hotel at Atlantic City, where these pictures were taken. Doors, walls, panels, picture moulding and surbasing may all be finished in this way. Black lines on white, cream or ivory are always effective, but for the small house of cottage style colors may be used with even better effect. Gray green, buff, light yellow and other colors are often used for woodwork. A light line of a contrasting color or of a darker tone of the same color can be used with great effectiveness as the black lines are used in the rooms pictured here. The result is an effect of extreme neatness and cleanliness, distinction and personality.



The Design of This Door Is Effectively Emphasized by the Black Lines of Paint.



The Mouldings Here Are Painted Rose and Green. Gray is the color of the woodwork.



## Why Wm. Cushman builds *insulated* houses

WM. CUSHMAN, Builder at Brattleboro, Vermont, realized that houses built with only the usual materials failed to stop heat-leaking. Wood, plaster, brick, concrete, etc. are not good insulators. He knew also that heat-leaking houses are becoming hard to sell, hard to rent, hard to mortgage.

So he investigated insulation. He found ordinary insulating materials were too expensive because they were extra items. Whereas Celotex serves both as insulation and a structural material. It is made from tough cane fibre into broad, strong boards.

Celotex stops heat three times as effectively as wood, eight times plaster, twelve times brick, twenty-five times concrete.

### Little or no extra cost

Unlike ordinary insulation, Celotex replaces other materials—is not an extra item in the building. As sheathing, it adds nothing to the cost of a house. Under plaster it costs a trifle more, but gives great advantages.

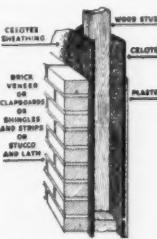
① As sheathing, Celotex supplies the insulation needed back of stucco, brick or wood exteriors. Here it replaces the rough boards formerly used, giving greater strength to the house walls. Building paper is unnecessary.

② On inside walls and ceilings plaster is applied directly to the surface of Celotex. This eliminates the use of lath, and forms stronger, insulated walls, free from lath marks.

③ Celotex is used for interior and exterior finish. It may be left in its attractive natural tan color or stained, stenciled or painted in any way.

④ Celotex eliminates the necessity for deadening felt. Sound does not pass through it readily.

⑤ Celotex does away with any extra insulation. It gives heat-stopping value, equal to the best.



Celotex is exceptionally economical to apply—it saves labor as well as material. It is sawed and nailed just like wood lumber and with less waste in trimming. Celotex comes in stock sizes: width 4', lengths 8' to 12', thickness 7-16", weight about 60 lbs. per 100 sq. ft.

Smaller, less expensive heating plants and radiators are needed to keep a Celotex house comfortably warm.

Ask your architect or lumber dealer to tell you more about Celotex. All lumber dealers can supply it. Leaders in these lines advise its use. And send the coupon below for complete details that show just how Celotex is used and its value to you as a builder.

THE CELOTEX COMPANY, Chicago, Ill.  
Mills: NEW ORLEANS, LA.

Branch Sales Offices in many principal cities  
(See Telephone Books for Addresses)

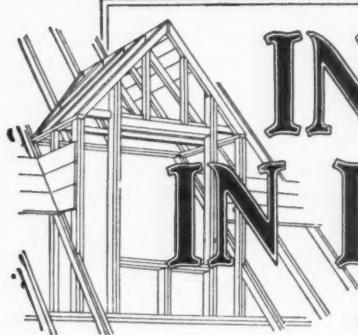
Canadian Representatives: Alexander Murray & Co.,  
Limited, Montreal, Toronto, Halifax,  
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The Celotex Company, Dept. T-145  
645 N. Michigan Ave., Chicago, Ill.  
Send the Celotex Building Book and Specification Book,  
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# CELOTEX

INSULATING LUMBER



# INSTRUCTIONS IN ROOF FRAMING

*This Department Appears Every Month in American Builder—Editor*

## Length Per Foot Run of Rafters

By JOHN T. NEUFELD

**I**N the last few discussions several different methods of obtaining the length of rafters have been given. In this lesson we take up the "length per foot run method" of finding the lengths of rafters.

We are not of the opinion that any one method is better than all other methods, we would rather advise the builder to acquaint himself with the different methods and to use the method that best suits the particular case. Another point that is well worth considering is that when the length of the rafter is found by one method, it is well to check by another method. We will also find that there are certain cases when one method will be more accurate than other methods, for instance, in odd shaped roofs the lengths of rafters may be found more conveniently by the square root method.

In this lesson we show how the three different types discussed and illustrated on the plate on page 212 is a method that is very accurate and very convenient to use for ordinary work. The first illustration shows what is meant by the "length per foot run" of a rafter. It is the length of a rafter that corresponds to one foot of horizontal distance. Notice that this length changes with the different pitches. Notice also that the "length per foot run" is obtained by taking the square root of 12 square plus the rise per foot run squared.

In this lesson we show how the three different types of roofs, the gambrel, the hip and the gable roof may be solved by the "length per foot run" method. These different roofs are really not so much different as far as the length of the rafters is concerned, as will be seen by studying the illustrations.

### "Length Per Foot Run" of Hip Rafters

The hip rafter runs diagonally, that is at 45 degrees to the line of the plate. Therefore the run of the hip rafter is longer than the run of the common rafter. For every foot run of common rafter, the run of the hip is 17 inches. This is the diagonal of a square whose sides are 12 inches respectively.

The length of the hip rafter for 17 inches of run of hip rafter is the length of the hip rafter for one foot of run of common rafter. Therefore, in giving the "length per foot run" of the hip rafter, we do not base it on the run of the hip rafter itself but on the run of the common rafter. The hip rafter shown in the third illustration

has a length of 18.76 inches for each foot of run of common rafter. As the run of the common rafter in this case is 4 feet, therefore, the length of the hip rafter would be 4 by 18.76 inches = 75.04 inches or 6 feet  $3\frac{1}{16}$  inches.

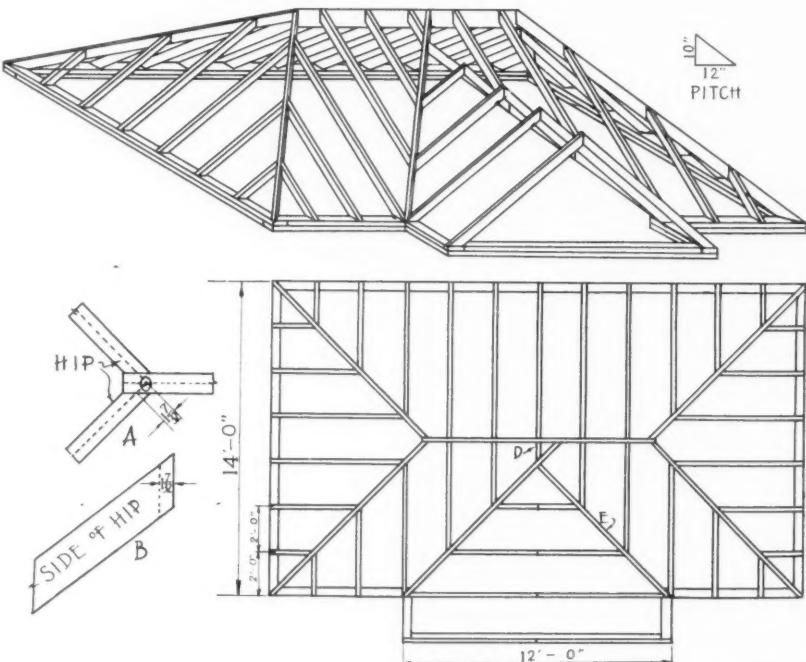
### "Length Per Foot Run" of Jack Rafters

The run of the jack rafter is parallel to the run of the common rafter and the length of the jack rafter is parallel to the length of the common rafter. Therefore, the length per foot run of the jack rafter is also equal to the length per foot run of the common rafter.

In finding the length of jack rafter we may, therefore, find the run and multiply the length per foot run by the run. Where the hip rafter runs at 45 degrees to the plate (that is on all even pitched roofs), the run of the jack rafter is the same as the distance from the seat of the jack rafter to the corner of the building. Thus, in the illustration, the first jack rafter is 1 foot 4 inches from the corner of the building and, therefore, the run is 1 foot 4 inches. The length of this jack rafter, therefore, would be 14.42 inches by  $1\frac{1}{3}$  (1 foot 4 inches =  $1\frac{1}{3}$  feet). The length of the jack rafter equals 14.42 by  $1\frac{1}{3}$  = 19.23 inches.

The second jack rafter is twice this distance from the

(Continued to page 216)



The Problems in This Lesson Are Based on This Roof Drawing Which Also Shows How Deduction Is Made from the Length of the Hip Rafter for the Ridge Board.



## *Building Construction is your life study— Paint is ours*

Your time is too valuable to give paint all the study it deserves.

Why not accept the combined knowledge and advice of over fifty expert paint chemists?

Especially when it is condensed on a single page!

This Architects' Painting Guide was developed by Sherwin-Williams to assist architects and builders in selecting the best and most durable finish for every surface.

Back of the Guide is the practical knowledge of our technical staff. And back of it is

the cumulative knowledge gained through sixty years of experience in the manufacture of paints, varnishes and allied products.

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In the minds of the public, "Sherwin-Williams" stands for "quality in paints." Therefore, you can't go wrong in using this Guide. Send coupon for a copy today.

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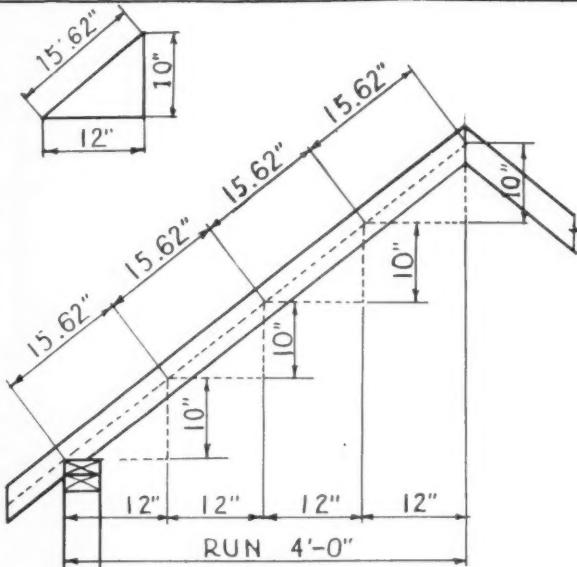
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Send me copy of Architectural Painting Guide.  
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NOTE: *Free Decorative Studio Service.* Experienced decorators will sketch and recommend decorative schemes for interiors or exteriors of your buildings.

There is no red tape attached to this offer.

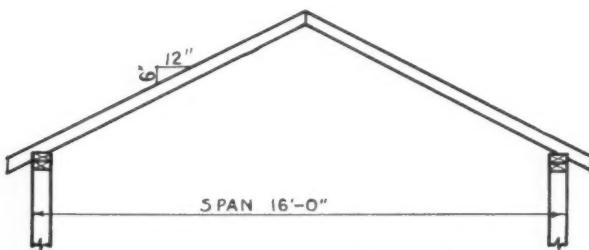
When offering houses for sale, make capital of the fact that the decorations were designed by experts. The coupon will bring specification sheets.



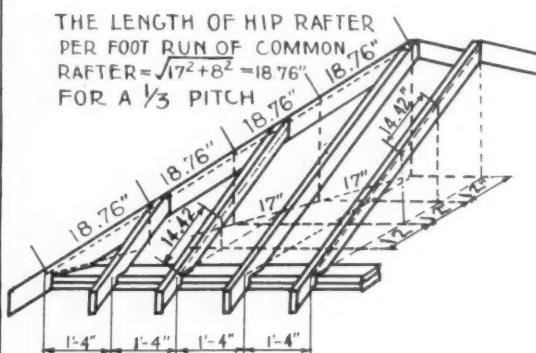
THE RISE PER FOOT RUN IS 10".  
THE LENGTH PER FOOT RUN IS 15.62".  
THIS IS  $\sqrt{12^2+10^2} = 15.62"$ .

	COMMON	HIP
24	26.83	29.36
23	25.94	28.55
22	25.06	27.76
21	24.18	26.98
20	23.32	26.21
19	22.47	25.45
18	21.63	24.72
17	20.81	23.31
16	20.00	23.31
15	19.21	22.64
14	18.44	21.99
13	17.69	21.37
12	16.97	20.78
11	16.28	20.22
10	15.62	19.69
9	15.00	19.21
8	14.42	18.76
7	13.89	18.36
6	13.42	18.00
5	13.00	17.69
4	12.65	17.43
3	12.37	17.23
2	12.17	17.09
1	12.04	17.00

THIS TABLE GIVES THE LENGTH PER FOOT RUN FOR COMMON AND HIP RAFTERS.  
SIMILAR TABLES ARE FOUND ON STEEL SQUARES.

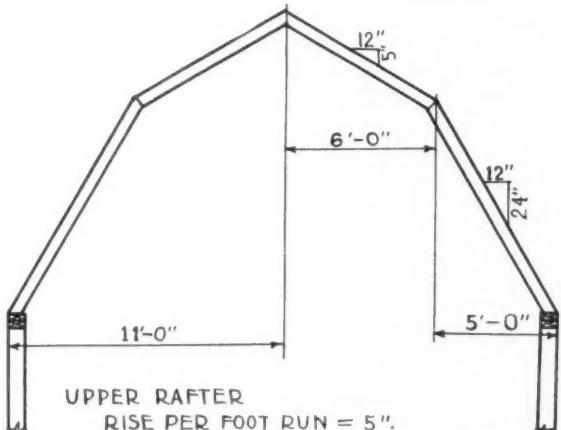


THE RUN OF THE ABOVE RAFTER IS  $\frac{1}{2}$  OF 16 = 8 FT.  
THE RISE PER FOOT RUN IS GIVEN AS 6".  
THE LENGTH PER FOOT RUN IS THE  $\sqrt{12^2+6^2} = 13.42"$   
THE LENGTH OF THE RAFTER IS  $8 \times 13.42" = 107.36"$   
 $107.36" = 8' - 11\frac{3}{8}"$

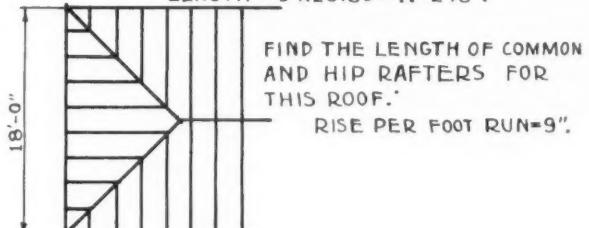


SHOWING THE RELATION OF THE LENGTH OF THE HIP RAFTER TO THE RUN OF THE COMMON RAFTER. ALSO THE RELATION OF THE LENGTH OF THE JACK TO THE RUN OF THE COMMON RAFTER.

THE JACK RAFTER HAS THE SAME LENGTH PER FOOT RUN AS THE COMMON RAFTER.



UPPER RAFTER  
RISE PER FOOT RUN = 5".  
LENGTH PER FOOT RUN = 13.0" (See Table)  
LENGTH =  $6 \times 13" = 78" = 6'-6"$ .  
LOWER RAFTER - RISE PER FOOT RUN = 24".  
LENGTH PER FOOT RUN = 26.83"  
LENGTH =  $5 \times 26.83" = 11-2\frac{1}{8}"$ .



COMMON RAFTER  
LENGTH PER FOOT RUN = 15.0". LENGTH =  $9 \times 15" = 135"$   
HIP RAFTER =  $11'-3"$   
LENGTH PER FOOT RUN = 19.21". LENGTH =  $9 \times 19.21" = 172.89" = 14'-4\frac{7}{8}"$ .

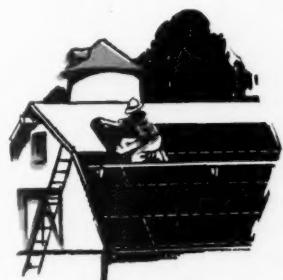
# protected!



## Genasco Sealbac Shingles

Genasco Sealbac Shingles are made of the same high quality materials as used in Genasco Latite Shingles, including the famous Genasco "Sealbac" feature—a generous coating of Trinidad Lake Asphalt Cement on the under surface which tends to make the shingles adhere closer to each other, and also protects them against the attacks of condensation underneath.

Furnished in both individual and strip. Genasco Sealbac Individual Shingles are made in three colors—red, green and blue-black. Genasco Sealbac Strip Shingles in red, green, blue-black and multicolor.



## Where a plainer roofing is desired

Genasco Roll Roofing, while not so ornamental as Genasco Shingles, is a roofing high in quality and moderate in price which recommends itself for farm buildings, factories, train sheds, warehouses, lumber sheds, etc. Made in two styles—smooth surface and slate surface. Each roll contains a supply of Kant-Leak Kleets, an excellent roof-fastening device.

## Shingles of the straight conventional type

## To preserve smooth surface roll roofing



## Treasure dug from a lake!

An asphalt lake—a marvel of nature! Trinidad Native Lake Asphalt is dug from the surface of the lake with mattocks. First used a half century ago as a street-paving material. Trinidad Lake Asphalt is today the foundation upon which the entire line of Genasco Roll Roofings and Shingles is built.

Included in the list of Genasco Products are the following. We will gladly send you full information upon request.

Genasco Asphalt Putty (Roofing Cement)  
Genasco Deadening Felt  
Genasco Insulating Paper  
Genasco Red Sheathing Paper  
Genasco Wall Lining

Genasco Slate Surface Roll Roofing is not only more attractive in appearance, with its red, green or blue-black surface—unfading colors—but is highly fire-resistant.

## Genasco Roll Roofing

## Genasco Stucco Base

Genasco Stucco Base has many advantages as a base for the application of Portland Cement and Magnesite Stucco. It is not only windproof, waterproof, rust-proof, and vermin-proof, but it

The Barber Asphalt Company,  
Philadelphia.

Please send me booklets describing the products I have checked:

Genasco Sealbac Shingles   
Genasco Roll Roofing   
Genasco Roof Coatings   
Genasco Stucco Base

Name .....  
Address .....  
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## Genasco Roof Coatings

Every two years roof coating should be applied to smooth-surface roll roofings—adds years to their life and preserves their waterproofing qualities.

Genasco Roof Coating is a heavy black liquid asphalt which dries to a tough elastic coating. One and 5 gallon pails, and 50 gallon drums. Shipped ready for use.

Genasco Asphalt Fibre Coating permits a much heavier application. It contains asbestos fibre and there is no danger of flowing in hot weather. One and 5 gallon pails, 30 and 50 gallon drums.



## Stucco base that saves labor and materials

requires a minimum of stucco, and saves time and labor in applying.

Made of high-grade felt thoroughly saturated and coated with asphalt in which granules of calcite are imbedded to act as a "key" or "anchor" for the stucco. In rolls 36 inches wide—each roll covering 100 square feet.

# Genasco Protective Products

## Roof Framing

(Continued from page 206)

corner. Therefore, it has twice the run of the first jack rafter and also twice the length.

### "Length Per Foot Run" for Gambrel Roofs

The gambrel roof is really similar to the gable roof only that we have two sets of rafters with two different pitches. The length of each is found by taking the "length per foot run" and multiplying it by the "run" of the rafter.

The table gives the length of the common rafter per foot run of common rafter for the different pitches, and also the length of the hip rafter per foot run of common rafter. The pitches in this case are given by the "rise per foot."

After studying the illustration we should solve the following problems referring to the roof illustrated on page 210.

#### Problems

1. What is the length per foot run for the common rafter of this roof?
2. What is the length of the common rafter?
3. What is the length per foot run of the hip rafter?
4. What is the length of the hip rafter?
5. What is the length of the longest valley rafter per foot run of common rafter?
6. What is the length of this valley rafter?
7. How would you find the length of the valley rafter E?
8. What is the length of the shortest jack rafter for this roof?
9. What is the length of the third jack rafter from the corner?
10. What is the length of the shortest valley jack rafter? (See rafter D in illustration.)

#### Answers

1. The length per foot run for the common rafter of this roof is 15.62 inches.
2. The length of the common rafter is  $15.62 \times 7 = 109.34$  inches = 9 feet  $1\frac{1}{16}$  inches.
3. The length per foot run of the hip rafter is 19.69 inches.
4. The length of the hip rafter is  $19.69 \times 7 = 137.83$  inches = 11 feet  $5\frac{3}{16}$  inches.
5. The length of this valley rafter per foot run of common rafter is the same as for the hip rafter that is 19.69 inches.
6. The length of this valley rafter is the same as the length of the hip rafter except that when cutting the valley rafter it must be set back a little differently from the hip rafter. This will be discussed in the future lessons.
7. The valley rafter E has a run corresponding to the run of a hip rafter for a 12 foot span because the addition is 12 feet wide. The length of this valley rafter is the length per foot run which is 19.69 inches  $\times 6 = 118.14$  inches = 9 feet  $10\frac{1}{2}$  inches.
8. The shortest jack rafter is 2 feet from the corner. The length per foot run is the same as for the common rafter, 15.62 inches. The length, therefore, of the jack rafter is  $2 \times 15.62 = 31.24$  inches.
9. The length of the third jack rafter from the corner is 3 times the length of the shortest jack rafter, that is  $3 \times 31.24 = 93.72$  inches = 7 feet  $9\frac{3}{4}$  inches.
10. The valley jack rafters are figured similar to the hip jack rafters. The run of the common rafter is 7 feet. The run of the first valley jack is 2 feet less as the rafters are 2 feet on centers. The second valley jack has a run of 4 feet less, that is the run is 7 feet less 4 feet = 3 feet. The run of the shortest valley jack is again 2 feet less, therefore, the run for this rafter is one foot. The length of this valley rafter is  $15.62 \times 1 = 15.62$  inches.

# NEWS of the FIELD

### Hartwick Display Draws Crowd

VISITORS at the Eighth Annual Home Builders' Show in Detroit, Mich., found the exhibition booth of the Hartwick Lumber Co., of Detroit, a feature of special interest. One portion of this exhibit showed two different types of roof over which a constant stream of water was kept running as a demonstration of sound roofing. The company's house organ, showing home-building plans, was displayed on the walls and over 40,000 bags advertising building materials were given away.



One of the Attractions of the Hartwick Lumber Co. Booth at the Detroit Home Builders' Show Was a Model of the Prize House Given Away at the Show.

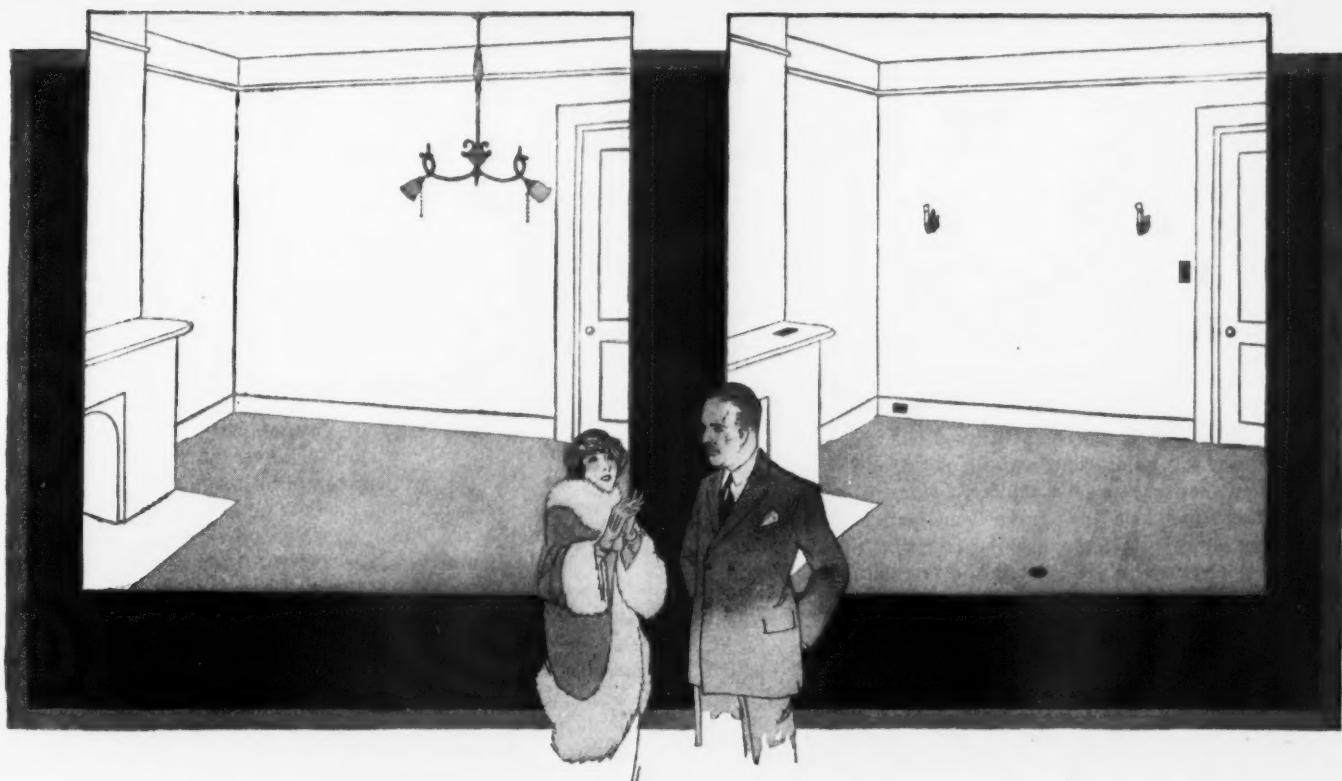
A large portion of the 200,000 persons visiting the show took part in the guessing contest by which a complete home was awarded to the winner. Each person was required to estimate the cost of the house from the model on display in the Hartwick booth and the one making the closest guess was awarded the home. The Hartwick company furnished each person with a list of the lumber required to assist them in estimating. The actual cost of the house awarded was \$14,999.12.



### A New Stucco Company

A NEW company has recently been organized under the name of the Stone-Wall Corporation, for the manufacture of a new stucco to be known as "Stone-Wall." The plant, operating on a gravity basis, will be located at 2307 N. Seventh Avenue, Harrisburg, Pa.

The principals in the new firm are H. S. Webster, for ten years sales and plant manager for the Rocbond Company; R. D. Pomeroy and A. Abner Erb. The plant and production will be in charge of Clafis Finny, a man long identified with the industry.



## Which room would make the sale?

The G-E Wiring System is a system of housewiring embodying adequate outlets, conveniently controlled, and using G-E materials throughout. If interested, address: Sec. AB-5

Merchandise Department  
General Electric Company  
Bridgeport, Conn.

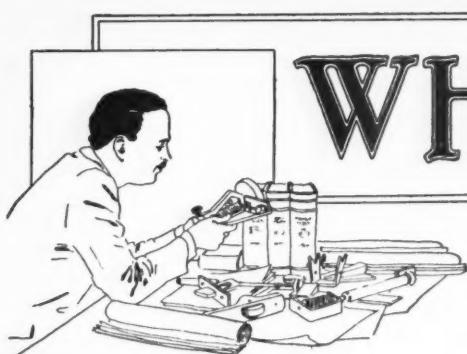
If you can show a woman convenience outlets for her lamps and appliances, clever lighting, and handy switches—if you can give her the comforting assurance that you have installed a G-E Wiring System, carefully planned for both adequacy and lifetime service—you will close the sale faster, and get a better price.

Every woman wants to live in a Home of a Hundred Comforts. Women know the G-E Wiring System. Use it—for your own profit—as hundreds of builders are doing.



**WIRING SYSTEM**  
*—for lifetime service*

# GENERAL ELECTRIC

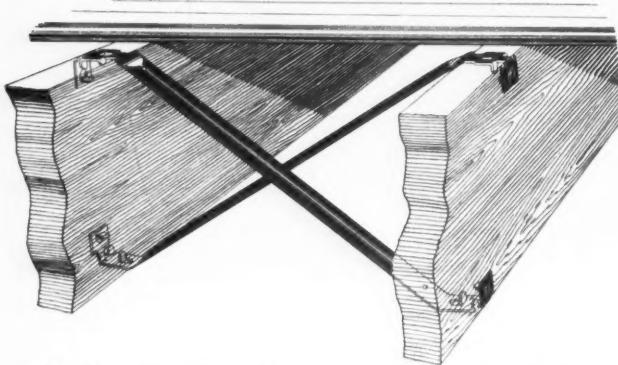


# WHAT'S NEW?

**EDITOR'S NOTE:** The AMERICAN BUILDER does not accept payment in any form for what appears in our reading pages. In order to avoid any appearance of doing so, we omit the name of the maker or seller of any article we describe. This information is, however, kept on file and will be mailed to anyone interested; address AMERICAN BUILDER Information Exchange, 1827 Prairie Ave., Chicago.

## A New Steel Bridging

A STEEL bridging recently invented is a new development for reinforcing wood floor and floor-framing. It is new because it is a tension bridging, whereas wood and other steel bridgings have been compression bridging. Another interesting feature is the fact that the new product is complete and ready to install and does not need any nails



This New Steel Bridging Is of the Tension Type Instead of the Familiar Compression Type and It Requires No Nails for Placing.

for fastening to the wood joists. Prongs are stamped out of the metal with points sharp enough to drive easily into the wood. These points take the place of nails.

This bridging can be used successfully for the many different conditions that occur in house framing. For narrow or wide spacing occasioned by framing around chimneys or bathroom plumbing, it can be installed without difficulty by bending and driving the prongs into the side of the joists instead of the bottom.

For regular spacing, the prongs are driven into the top or bottom of joists, and an end prong is bent over and driven into the side, thus providing a secure anchorage which no strain will loosen.

It is made of black strip steel, corrugated to give strength, and coated with acid-proof paint to make it rust-proof. It makes a neat appearance and gives great strength to wood joist floors and thus is a big improvement over the old-fashioned wood bridging. It is easily installed and does away with what was formerly a tedious and tiresome job, and it affects a saving in labor cost. Standard sizes are for six, eight and ten-inch joists spaced on 12 and 16-inch centers.



## Cements Tile to Any Base

THE manufacturers of a new cement claim that the practice of installing tile over a base of metal lath and masonry is no longer necessary. They state that their product will bond tile, glass or slate to any surface and give perfect results with a saving in material and labor costs which, in many cases, will exceed 30 per cent of the cost under the old method of tiling.

Due to the non-expanding and non-contracting features of many synthetic sheathing materials, they are particu-

larly adaptable as a base for tile, using this cement, and it is used without scratch or brown coat on hollow tile, terra-cotta block and brick. Mixing, hod carrying and soaking of the tile is entirely eliminated with its use. The capillary action of the dry tile draws the cement into the pores of the tile, forming what more nearly resembles a weld than a bond and the cement becomes an integral part of the tile itself with the base.

It is entirely feasible to keep the tile even with the plaster line, thus saving from one to two inches in the over-all dimensions of the room. This cement comes in 50 and 100-pound drums, in plastic form, ready for use without mixing.

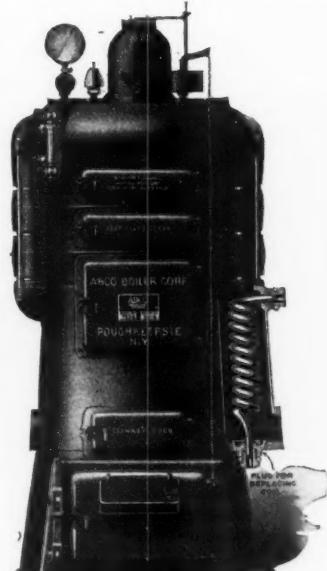


## New Efficient Boilers

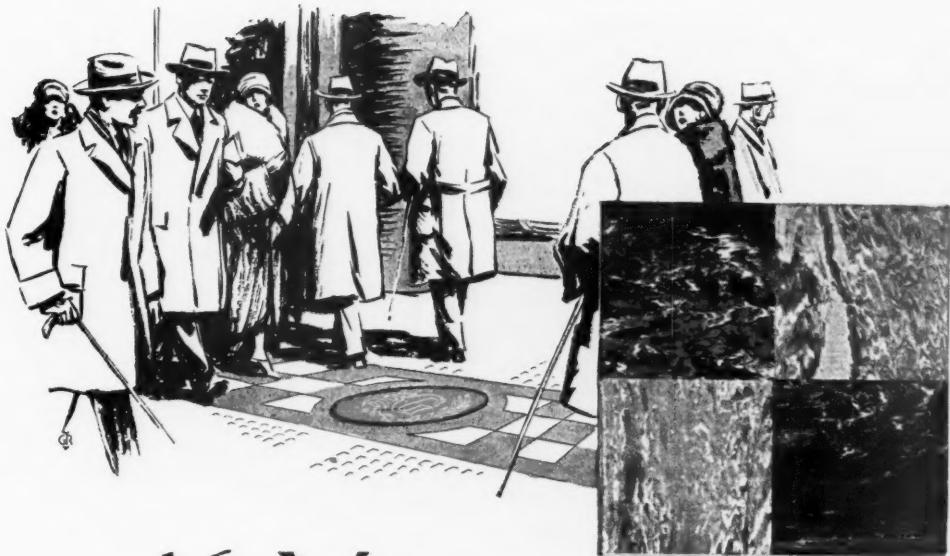
A NEW line of round boilers, built by a company which has had many years of experience in boiler design, is constructed on principles for obtaining the maximum heating efficiency with the minimum fuel consumption. These are both hot water and steam boilers and feature a hot water heating coil incorporated as an integral part, eliminating the need of an additional unit for supplying hot water. The clear water circulating through this coil is heated by the hot water which circulates around it, giving an unlimited supply of hot water for household use by maintaining only the one fire.

The grate is designed in proportion to the heating surface to insure a maximum result with a minimum combustion. The large area of the heating surface enables this boiler to produce heat in a remarkably short time. An ample combustion chamber insures the proper consumption of fuel from the time the full charge of coal is applied until the end of the firing period. Owing to the design of the intermediate section, the entire upper part of the boiler becomes an adjunct to the combustion chamber itself.

Smoke parts are so designed that no sharp turns are made by the products of combustion in passing out to the chimney. This gives a more rapid and natural flow of the gases, a larger percentage of heating surface, and thus increases efficiency. The check draft is controlled by an automatic regulator which may be set as desired, thus maintaining a constant temperature regardless of atmospheric conditions.



Both Steam and Hot Water Plants of This Type Have a Hot Water Heater Incorporated as an Integral Part of the Unit.



## 16 Years service as a public thoroughfare

SIXTEEN years ago, on the sidewalk before the B. F. Goodrich Company Building, at 1780 Broadway, New York City, we inserted an inlay of Goodrich Rubber.

Today, in spite of the tread of millions of feet and the exposure to every weather extreme, it shows only the slightest sign of wear. One fact is assured—Goodrich knows how to put durability into such products.

That is the prime reason for the wide choice of Goodrich Rubber Flooring by

Builders and Architects—it is practically a permanent floor covering.

But it has other pronounced advantages. It is sanitary and noise-deadening. It is non-porous, and its smooth surface can be kept clean and aseptic. Strong soaps or alkalies will not damage.

Another Goodrich advantage—this flooring comes in rolls. It is vulcanized into a solid sheet with no seams. It is more sanitary with less chance to collect dirt, and it costs less to lay in the beginning. *Send for catalog and samples.*

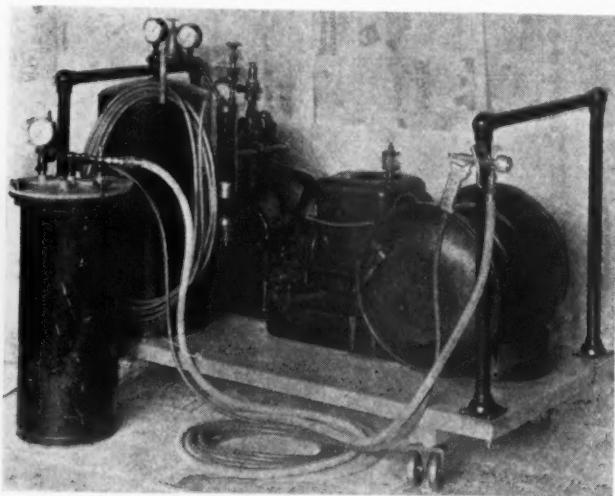
THE B. F. GOODRICH RUBBER COMPANY *Established 1870* Akron, Ohio

# Goodrich Rubber Flooring

\*\*\* SUPPLIED IN ROLL FORM \*\*\*

### A Spray Paint Development

ON page 480 of the April issue of AMERICAN BUILDER a complete spray painting unit was described. This unit which is a self-contained, portable equipment for applying paint, lacquer or paint remover is operated by an



Because of the Demand for a Gasoline Operated Unit the Spray Paint Equipment Has Been Adapted to a Two Horsepower Engine.

electric motor. Since the publication of this description and the advertising of this unit, the manufacturers have received so many inquiries for a similar unit to be operated by a gasoline engine, instead of an electric motor, that the unit is now being equipped in this way. This adapts it for use where electric current is not available and greatly broadens the field of its application.



### Combined Bench and Floor Saw

A NEW and larger portable, universal saw has been announced as an addition to a popular line of wood-working machines. This is a floor type of circular saw combining the advantages of the portable bench machine and self-contained floor type. It is easily moved on its one-way casters but is perfectly rigid in operation. The motor and all working parts are built into the upper portion with the table and fences, the top part forming a complete, self-contained bench type saw when lifted off the regular stand.

This saw is equipped with a one horsepower, three-phase motor operated on either a light or power circuit. The constant speed is directly geared to the saw spindle, eliminating all belts, and ball bearings on the motor are provided with an adjustment for taking up any play. Saw spindle bearings and gears are automatically lubricated by a splash oil system.

The table is one piece of finished steel 25 inches square and is fitted with a removable throat piece so that special saws, dado and cope heads requiring a wider throat opening may be used. A great cutting capacity is accompanied by precision accuracy and the smallest and most delicate work can be handled safely. For cutting angles up to 45 degrees the saw is tilted instead of the table while either ripping or cross-cutting. The table has a capacity of 12 inches by 2½ inches between the blade and fence.

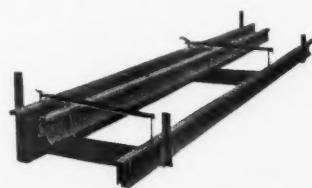


The Upper Portion of This Saw Forms a Complete, Self-Contained Bench Type Saw When Lifted Off the Stand.

### Improved Curb and Gutter Forms

AN improvement in curb and gutter forms has recently appeared in the development of a new face rail clamp. This clamp, or overhead hanger, as it is sometimes called, is made with hook bolts on both ends which bolt down onto the top flanges of the front and back rails. A long wing, connected with the face rail clamp, extends through a slot in the top of the fence rail, extending down its entire depth, and prevents the face rail from spreading.

Near the top of the wing is a small piece of angle iron which rests on top of the face rail, preventing it from creeping up and giving clearance under the face rail clamp for the use of finishing tools. The division plate is made with long wings on each end, which hook down through the slots in the front and back rails, preventing them from spreading. This form is used in many large city jobs and has already proved highly speedy and efficient for curb and gutter construction.



Here Is an Improved Form of Curb and Gutter Form Which Is Winning Approval.



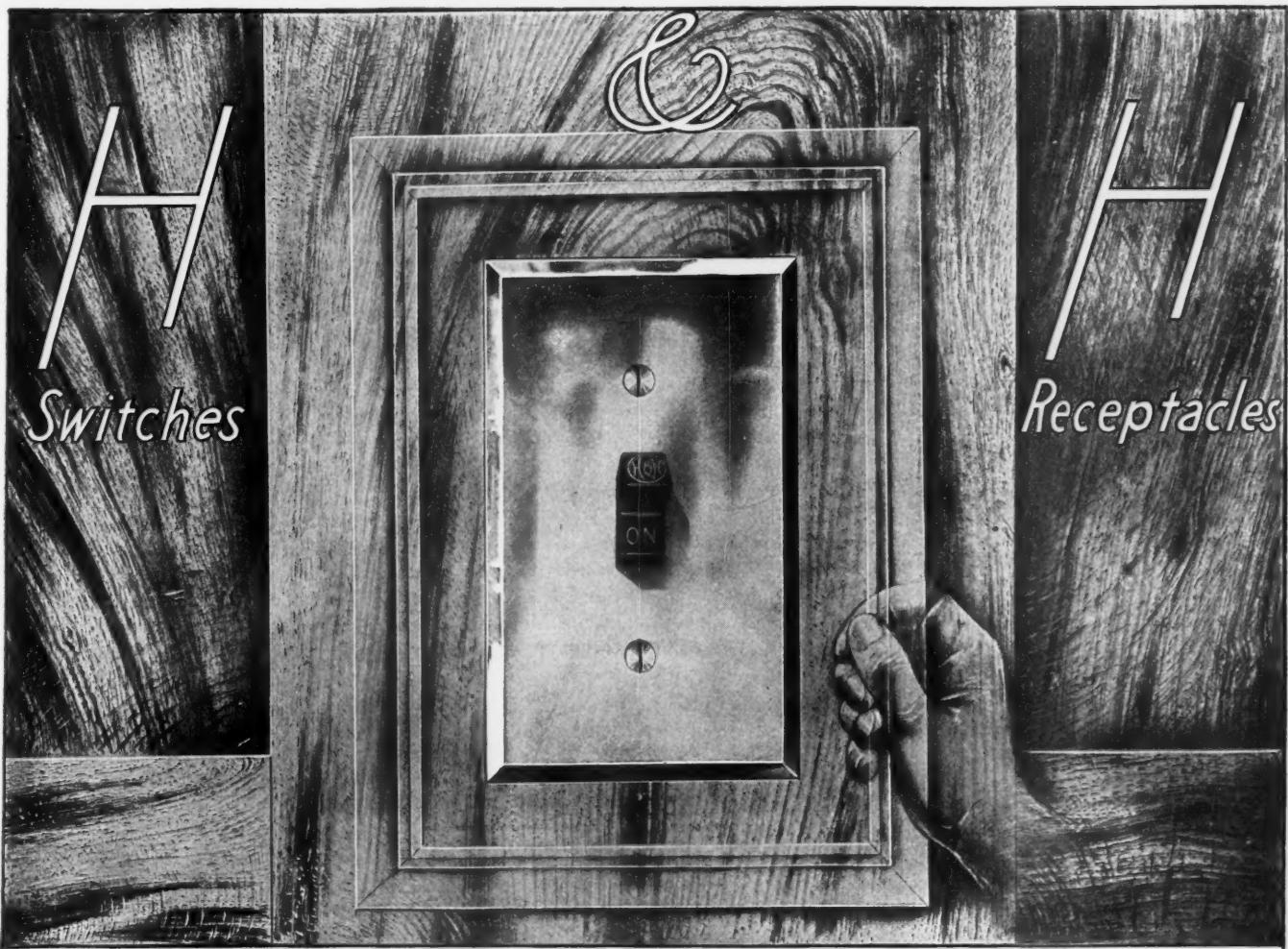
### Lead Coated Sheet Steel Roofs

THE excellent qualities of lead for such purposes as roofing have long been recognized and there are today lead roofs which are in as perfect condition as the day they were laid, centuries ago. These lead sheets have remained entirely unaffected by weather, or the acid from smoke, impervious to corrosion. With the massive type of construction which was in use when these old structures were built, heavy lead sheets could be used, but even then were too expensive for any but the few buildings where permanency was essential and cost was little considered.

Now, however, the enduring qualities of lead have been utilized in a material which is within the reach of practically any builder, which is light enough for use in the modern type of building and possesses a strength which was lacking in the old sheet lead roofs. One manufacturer has finally developed a successful method of producing a lead covered steel sheet which has all the enduring qualities of solid lead and the strength and lightness of steel.

From this material roofing shingles and tile, sheet roofing, gutters, down spouts and siding are formed. They may be painted any desired color or if left with the natural finish take on a weathered gray tone which, in many combinations, is highly pleasing.

This process of coating steel with lead comes after years of unsuccessful attempts to accomplish this very result. It makes available a roofing which weighs considerably less than slate and only slightly more than ordinary metal roofing and which costs much less than clay tile. It is particularly adapted to use in industrial localities where the sulphuric acid in smoke rapidly destroys other metal but leaves this material undamaged. In the same way it is unaffected by salt atmosphere which quickly corrodes other metals. Because of its long life its use is highly economical and it is as suitable for the roofing of homes as for industrial plants or other large buildings.



## *H&H Flush Switches—Up Front*

### FOR "TUMBLER" REQUIREMENTS:

#### NO. 8601 SQUARE .



Has the famous feature of the *Balanced Movement*; puts the user in touch with quality he can *feel*. Most quiet, easy-throw mechanism in any Tumbler; most positive action. Exclusive in looks and in "works", but competitive-priced.

### FOR GREAT SERVICE-LIFE:

#### "2081" PUSH SWITCH



The "Old Reliable" for quiet, enduring service. Buttons press with an even tension; no more resistance near the end of the stroke than at the beginning. No jar as the contacts meet. Maximum value at medium price.

### FOR THE COSTLY EDIFICE:

#### "GOLD STAR" PUSH

For *de luxe* jobs needing every refinement of fine craftsmanship. Works with the lightest of touch and complete lack of jar. Called "Silver Star" when ordered with luminous push-button.



### FOR SHALLOW PARTITION WORK.

#### "NUTMEG" 4401-S.

Leading all switches in number installed; leading all competitive-price switches in sturdiness. Good enough so your modest jobs may safely be judged by the switches. Refer to your *H&H Catalogue* or *Architect's Handbook*—to

*Always Install Good Switches*

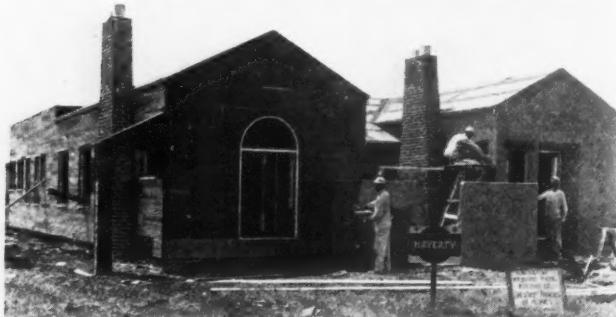


**THE HART & HEGEMAN MFG. CO. HARTFORD, CONN.**

*Makers of Electric Switches since 1891.*

### Keyed Plaster Board

A TYPE of plaster board which until recently has been manufactured for local consumption only has now been placed on a broader distribution basis. This board is made in sheets 16 by 48 inches. A key shaped groove



**Sheathing a House with a Type of Plaster Board Which Has a Keyed Surface to Form a Firm Bond.**

is formed by folding a waterproof sheet by means of a continuous process. This sheet is used as a mould in casting the board as well as an exterior cover. Otherwise the composition is the same as that of other plaster boards.

When used in place of lath, as a plaster base, this board is said to form an exceedingly strong bond as well as being highly fire resistant and waterproof. The strong bond is obtained as a result of the grooves and this bond is said to have withstood a shearing test of 2,650 pounds.

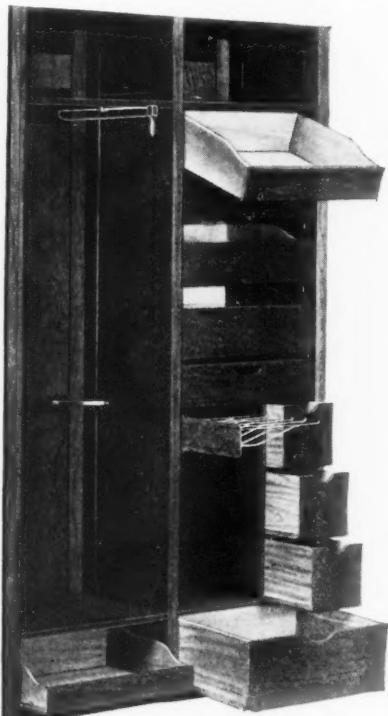
Another advantage which is claimed for this plaster board is that it permits the natural drying of the outside wall because there are no high spots after drying. It is said to be exceptionally rigid which prevents sagging and that each wall is formed into a unit so that if it is damaged the point of contact only is affected and the plaster will not fall off. When broken by impact there is no cracking of the plaster.



### Built-in Wardrobe Closets

BUILT-IN wardrobes of the modern type are great space savers for hotels, apartments and homes. The manufacturer of the units illustrated here states that by using the wardrobes in place of the ordinary closet 17 rooms can be obtained, in a hotel for example, where only 16 rooms would otherwise be possible. For the hotel owner this means increased income, for the apartment owner larger or more apartments and for the home owner more commodious rooms.

These wardrobes are made in two styles of unit. Each unit, of either style, occupies a space just 2 feet wide and 1 foot 8 inches deep. The height is 6 feet 8 inches. The units are of choice, kiln dried gumwood and the cabinet work is finished to a medium walnut to harmonize with any color scheme. They are shipped complete, ready for installation when the interior finish is put in. They are set into an unfinished recess in the wall which need not be floored, plastered, wired or painted and may be installed by a carpenter in about one hour. Doors and door trim are not included. These should be supplied with



**Built-In Wardrobe Units Save Large Amount of Space by Eliminating the Ordinary Closet and Afford Great Convenience.**

work of the same design as the other interior finish of the room.

One style of unit is equipped with a hat shelf at the top and below this a space having an outward sliding rod on which can be hung 12 suits of clothes or 20 dresses. Two steel loops at the back accommodate canes and umbrellas. Beneath there is a drawer holding four pairs of shoes while the shelf above it will hold five other pairs.

The other style of unit is equipped with a hat shelf and nine drawers, one being divided to hold collars, ties, gloves and other small pieces. There are six large drawers and three smaller ones for underwear, hosiery and so forth and a large one for general storage. Four of the large drawers operate on substantial, double coppered, steel tracks and roller bearings which insure against warping, swelling and shrinking and consequent repairs. The two top drawers, when pulled out, tilt for greater convenience. There is also a sliding hanger to accommodate six extra pairs of trousers or six skirts.

Any combination of units may be used, one of each style or one of the second style flanked by two of the first style being a popular combination. Not only do these installations save considerable space but they also save the cost of finishing closets and the cost of chiffoniers and provide compact, convenient storage space for all apparel in one place.



### Inexpensive Colored Plaster

A COLORED, sand float finish plaster has been developed to meet the demand of the plastering trade, architects and builders for an inexpensive, colored, interior plaster which can be applied with the ordinary tools of the plasterer with a minimum of necessary precautions. It is a plaster tinted with mineral pigments which assure uniform and permanent color tone. It requires the addition of water only, on the job, and is washable with soap and water without the application of a surface coat of size.

This plaster is made in nine colors, cream, gold, pearl, buff, gray, tan, blue, green, rose and white. It is shipped in 800-pound bags and its coverage is 175 to 200 square yards per ton. Rough medium or smooth float finishes may be produced by the use of cork, wood, carpet, or felt floats. Because of its all mineral pigment and even diffusion of pigment, obtained by factory mixing, it eliminates the danger of uneven colors.

To prepare a wall or ceiling for its application the usual plastering grounds are used and the base coats are brought to  $\frac{1}{8}$  to  $\frac{1}{16}$  inch of the grounds. The base coats are broomed thoroughly after darbying to provide a strong mechanical bond with the finish coat. The colored finish is applied 12 to 24 hours after the application of the base coat, which the latter is "half-green." If the base has become bone dry it should be thoroughly wetted. Only a little water is used in floating.

Ten quarts of water are mixed with each bag of the colored plaster. It is allowed to soak for 10 to 20 minutes and is then hoed to a creamy consistency and troweled on. A stiffening action starts in about two hours and the set is complete in seven hours. Care is taken to avoid re-tempering after the material has started to set.



*The Elizabethan School  
of Plasterwork*

Plas Mawr, Conway, Wales—was built during the latter part of the Sixteenth Century. It was visited by Queen Elizabeth, and is still standing as a monument to the native school of lime plasterwork developed during her reign. Modern adaptations of the Elizabethan technique are observable in many rich cornices and ceilings of today.



## Character of Interiors Closes Most Sales

WHILE the exterior beauty of your "homes for sale" may express individuality and character, it is a recognized fact that the closing of the sale hinges on the beauty of the interior, its rooms, its conveniences—and above all else its walls and ceilings.

Today, builders have found inexpensive, simple, antique textured surfaces the best sales feature they have to offer—actual sales closers. Sand or smooth finished, these walls, ceilings, panels, mouldings and cornices are so attractive that they lend an atmosphere of dignity and elegance to modest homes as well as mansions.

In pure white *Tiger Finish*—with its uniformity and high quality, its sound absorbing qualities, its plasticity and covering capacity—the fact that it "spreads like warm butter"—you have the brand most popular with the trade.

### The Kelley Island Lime & Transport Company

World's Largest Producer of Lime  
including Tiger Finish, Tiger Mason's, Tiger Agricultural  
and Lump Limes for All Purposes  
Leader-News Building, Cleveland



**TIGER** REG. U. S. PATENT OFFICE **FINISH**  
"SPREADS LIKE WARM BUTTER"

### Simple Versatile Sander

THE illustration shows one of the most versatile little machines which has appeared in the building field. In the illustration it is being used as a floor sander but it also serves as a bench machine for sanding any flat surface, as a jointer and as a grinder. With the long handle detached it is used as a bench machine just as a smoothing plane and is just as simple and easy to handle.

By inverting this machine on a special base provided with a clamp to hold it in position, it becomes a serviceable jointer. With it you may edge up your casings, clean up your back bands, window stops and so forth. Material may be taken right from the saw, run over the jointer and it is ready to finish.

To use this as a grinder it is only necessary to take the motor out of the sander and slip it into a special base provided for the purpose, using emery paper instead of the garnet. It is then ready for grinding tools and will do a good, quick job. It is excellent for removing rust from saws and other tools.

Used as a floor sander it is said to be capable of surfacing more than half as much floor in the same length of time, as is possible with a large, 8 by 12 drum machine. This is explained by the fact that 30 per cent of the power is saved by eliminating all driving mechanism, that the speed is increased from 850 r.p.m. to 1,800 r.p.m., which more than doubles the power, and that the six-inch roller is not required to remove as much wood as a 12-inch roller. It also eliminates practically all hand work in sanding floors as it will work right up to the baseboards on both sides and can be operated in a closet of any size.

By a special arrangement of the fan blades, on the end of the motor, the air is forced through the ventilated compartment which retains all the dust. The cost of this machine is small and it will serve for an indefinite length of time because its simplicity protects it against getting out of order. It is really nothing more than a ball bearing, revolving motor used as a sanding drum.



### Septic Tank Systems



Septic Tanks of Copperoid Iron Are Rust Proof and Correct in Design.

ists, have been faulty in design because of local theories and changes and because of the difficulty of making such tanks absolutely water-tight.

Septic tanks of heavy copperoid iron, rust-proofed for durability, and designed according to the specifications of



Highly Efficient as a Floor Sander. This machine also serves as a bench machine, jointer or grinder.

the U. S. Public Health Service, the leading authority on sewage disposal, overcome former difficulties. With these tanks is provided free advisory service for any special problems, location of tank, layout of filter bed or other plans for final disposal.

These tanks are made of 14-gauge, copper alloy iron, rust-proof enameled by a process which is unaffected by moisture, acids or soil. Capacities are available for all installations from the single home to large schools, mills or communities. No chemical is required with the use of this system, the septic action being a bacteria growth, self-generated in the tank, which breaks up the solids. The liquid is then discharged near the top of the ground by means of a filter bed. The tanks need only be inspected at intervals and cleaned if there is much accumulation of sediment in the first chamber.

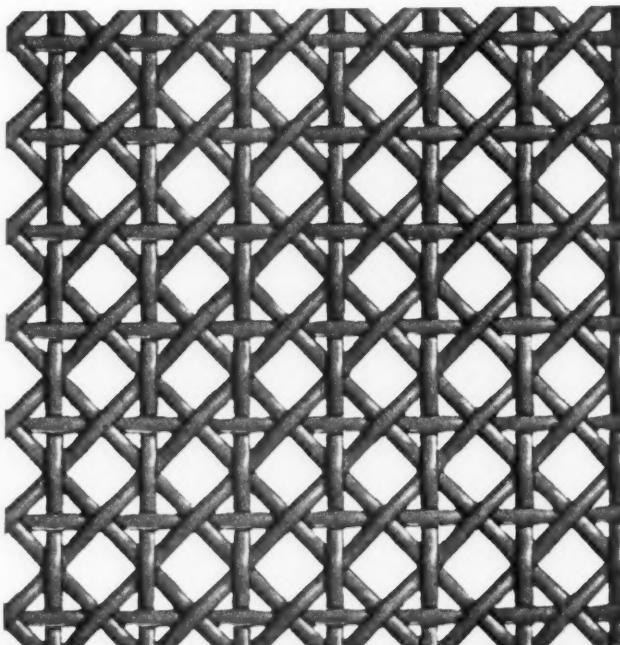


### A Grille of Woven Steel Cane

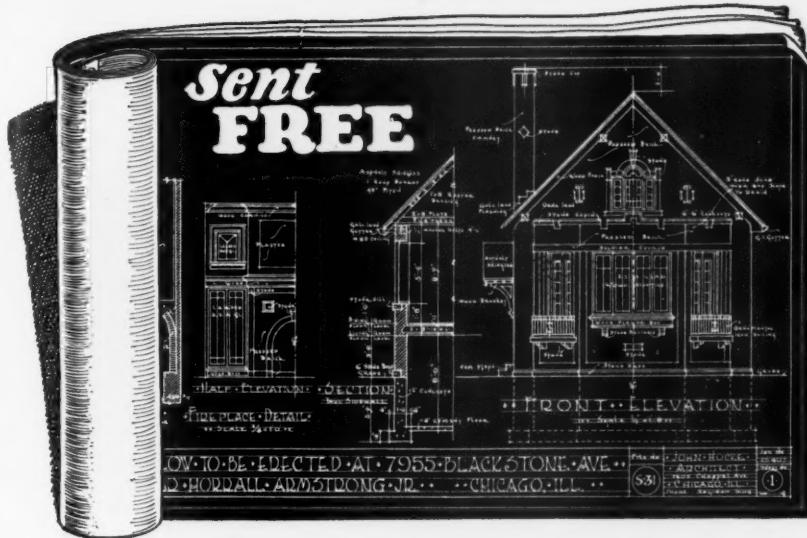
A REAL need in the building field is met by the grille illustrated below.

This shows the actual size of its woven pattern. The grille is a reproduction in metal of the cane work which for centuries has been used by masters in furniture design, but which has seldom been used architecturally, due to its fragile nature and short life. This new grille makes it possible to obtain the pleasing effect of cane work in heating and ventilating ducts, radiator cabinets and other interior work without sacrificing the stiffness and durability of steel.

This grille is actually woven just as is cane work. The metal strands are made in the same form as the cane—one side convex, the other flat. The closest scrutiny will hardly reveal the fact that it is composed of metal rather than rattan. This type grille affords liberal air-space—over 60 per cent. In spite of its strength it is light and easy to handle.



This Steel Grille, Woven Just Like Cane, Meets a Real Need in the Building Field. The illustration is actual size.



## You Can Become a Building Expert

**Plan Reading.** Every man who has got very far ahead in any building trade can read blue prints. No man can expect to be a first rate foreman or superintendent until he knows what every line on a plan means and how to lay out and direct work from the architect's plans. By the Chicago Tech. Method you quickly learn to read any plan as easily as you read these words.

**Estimating.** Of course a man who wants to be a contractor or to hold a big job in a contracting organization must know how to figure costs of labor, material, and everything else that goes into any kind of building. The Chicago Tech. Course covers every detail of this important branch—shows you just how it is done from actual blue print plans.

**Superintending.** How to hire and direct men, how to keep track of every detail of construction as it goes on, how to get the work done in the least time at the lowest cost is also fully covered in the Chicago Tech. Builders' Course.

Also special courses in Architectural Drafting for builders, taught by practical men. These explained in Special Catalog "D" sent on request.

## CHICAGO TECHNICAL SCHOOL FOR BUILDERS

Dept. 536, Chicago Tech. Building, 118 E. 26th St., Chicago, Ill.

**Mail the coupon for Blue Print Plans and 24-page Book:**

## "How to Read Blue Prints"

Blue Prints are interesting to every man in the building trades. And more! They are the key to every builder's success. For until you can read and understand blue prints you will probably have to be satisfied with only a scale wage. The man who can read blue prints can become foreman, superintendent, or have a business of his own. To help every man who really wants to make money and get ahead in building, Chicago Technical School for Builders offers absolutely free these Blue Print Plans and a 24-page book "How to Read Blue Prints."

### What this book is

This book is written by an expert . . . a practical builder who knows the game from top to bottom. It tells how different materials are shown on blue prints, how "sections" and "elevations" are shown on plans, how to lay out a building from a plan, how to take off quantities . . . and all the other interesting and important facts regarding blue prints. The book is as easy to read as your newspaper . . . written in plain, everyday English that everyone can understand. "How to Read Blue Prints" will be mighty helpful to you. Aside from the real help it gives you it will show you how clear and plain and easy the Chicago Technical Builders Course is . . . how quickly you can learn in your spare time . . . at home . . . to become a building expert.

### Learn at Home to make more money

For 23 years the Chicago Tech. School for Builders has been training men to advance and make more money in building. Hundreds of successful men, superintendents

and contractors, owe their success to their Chicago Tech. training. We train you by mail . . . in your spare time . . . at home.

### Send the Coupon . . . Now

With the free Blue Print Plans and our book "How to Read Blue Prints" we will send you another book . . . also sent absolutely free. It tells all about the Chicago Tech. Builders course . . . directed by practical building experts . . . tells what others say this course has done for them . . . shows pictures and gives all the facts about our method of training men . . . quickly . . . for the jobs that pay most money. This may be your golden opportunity. It costs you nothing to find out all about it. So send the coupon in now . . . for the free plans and books.

### Mail the Coupon—NOW

#### CHICAGO TECHNICAL SCHOOL FOR BUILDERS

Dept. 536, Chicago Tech. Bldg., 118 East 26th St., Chicago, Ill.

Please send me without obligation your Free Books and Blue Prints for men in the Building Trades. Send postpaid to my address below. It is understood that no salesman will call on me.

[Write or print name plainly]

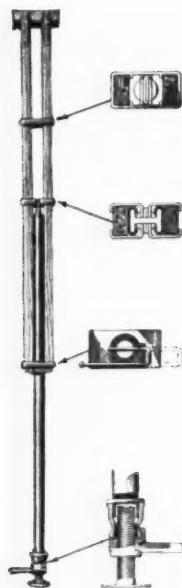
Name . . . . .

Address . . . . .

City . . . . . State . . . . .

### A New Adjustable Shore

A NEW adjustable shore which, the manufacturers claim, will cut the cost of old four by four shoring in half, has recently been placed on the market. This shore is composed of two by four studs which telescope on 1½-inch black steel pipe and is adjustable from 8½ to 14½ feet. Its initial adjustment, with the pin, as well as the final hair line adjustment, with the heavy screw jack on the bottom, is positive and will not permit the shore to creep or settle when the load is applied.



This Adjustable Shore Is Said to Cut the Cost of Shoring in Half.

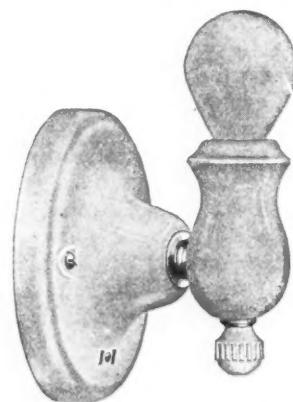
making it easy to handle and easy to erect with one man. Another advantage of this light weight is the proportionately lower freight and trucking charges. Stay bracing, due to the snug manner in which the shore is placed under form work, is not required on heights up to 12 feet.



### Bright or Dim Light as Desired

THIS light bracket is the latest addition to an extensive line of lighting fixtures and is a particularly desirable fixture for bathroom installation. The canopy is oval in shape and measures 6½ by 6½ inches. The distance from the wall to the center of the lamp is 4½ inches. It is of pure white, glazed porcelain and nickel plated brass and its finish as well as its graceful proportions make it handsome enough for the finest home.

By quarter turns of the knob at the bottom of the bracket, four adjustments of light are secured—bright, dim, very dim and out. This fixture is supplied either with or without a convenience outlet in the canopy. It is furnished with a heavy bar and nickel plated screws for mounting and is shipped completely wired and assembled ready to be connected at the outlet.



A Fixture for Bathrooms and Bedrooms Which Makes Possible Three Intensities of Lighting.



### "Truck Mounted Derrick"

IN an item published under the above head, on page 484 of the April issue, an error was made in the caption

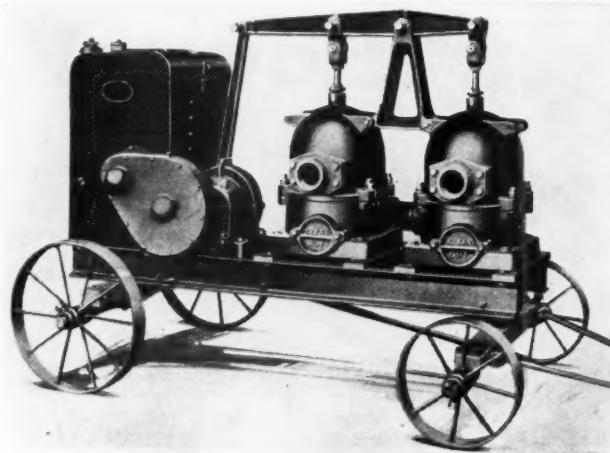
appearing under the illustration. This caption gave the capacities of the two sizes of the derrick as 1,000 and 1,500 pounds. The correct capacities are, as stated in the text of the same item, 1,500 and 3,000 pounds.



### A New Diaphragm Pump

BY using a perfectly balanced, two cylinder engine on a heavy duty, balanced, diaphragm pump, a well known manufacturer has developed the new unit illustrated here. It is powered with a 3-6 H.P., two cylinder, opposed throw, 180 degree counter-balanced crankshaft engine, without vibration. The crankshaft and drive shaft run in Timken tapered, roller bearings. It is of the hopper cooled type, enclosed in a steel housing.

The engine speed is reduced by an enclosed, self oiling speed reducer, changing the drive shaft speed to the proper pump crankarm speed. Oil is picked up by the gears and fed by automatic oil scrapers to all bearings. The unit



A Heavy Duty, Diaphragm Pump, the Perfectly Balanced, Two Cylinder Engine of Which Eliminates Vibration.

is oil tight and dust proof. The engine pinion and speed reducer gear run in an oil tight gear case and also operate in a bath of oil.

Diaphragm pumps usually work under conditions not conducive to long life of the wearing parts, but the enclosed self-oiling speed and gear reducing units protect these important parts, eliminating any disadvantages of the open geared type of pumps.



### Cedar Plaster for Closets

CEDAR-LINED closets for every room, at a low cost, have been made possible by the development of a new kind of plaster which is a composition made from Tennessee aromatic cedar and other moth and vermin repellents that retain their odor indefinitely. The cedar fumes are said to be even more pungent than those from cedar wood and are highly effective if this plaster is not covered with any tint, stain or paint.

This material comes complete in a sack and should never be mixed with sand, lime, cement or any other kind of materials as it is already properly mixed and balanced. The contents of the bag are placed in a clean mixing box and the contents of the enclosed half gallon can are added to a bucket of clean water. This water is poured into the plaster, which is worked to a consistency that works easily under the trowel.

The plaster can be applied either direct to the lath or any other plaster base but if applied direct to the lath it should be in two coats, the first applied the same as other plaster, as an ordinary scratch coat, and then a 3/8-inch finish.



## Use 4-Tone Hex-Agonal Strips for Distinctive Roofs

WHEN you are considering a roofing or re-roofing job, use 4-tone Hex-agonal Strips and you'll obtain a roof of unusual color values.

There are four tones of slate granules inbedded in *each* shingle. From these tones four different blends result—ranging from a mellow brown to a purplish steel-blue. Laid in sequence, a charming effect is produced by their perfect harmony.

Ruberoid 4-tone Hex-agonal Strips are pre-assorted. They are packed in bundles with definite instructions so that the roof will be laid properly in sequence of their color value. This makes laying a very simple job. There are 43 strips to the bundle—two bundles to the square, weighing 165 to 175 pounds.

4-tone Hex-agonal Strips are easily laid over old wood shingles. A minimum amount of time is required as there are but *three* nails needed to secure each strip. Use the coupon below. It will bring you full information regarding Ruberoid 4-tone Hex-agonal Strips.

Chicago

The RUBEROID Co.  
New York

Boston

# RU-BER-OID

## SHINGLES AND ROOFINGS



*There is but one Ruberoid  
Look for the Man on the Label*

Dept. 1

The RUBEROID Co.  
95 Madison Ave., New York

Gentlemen: Please send me samples and full information regarding Ruberoid 4-tone Hex-agonal Strips.

Name \_\_\_\_\_

Address \_\_\_\_\_

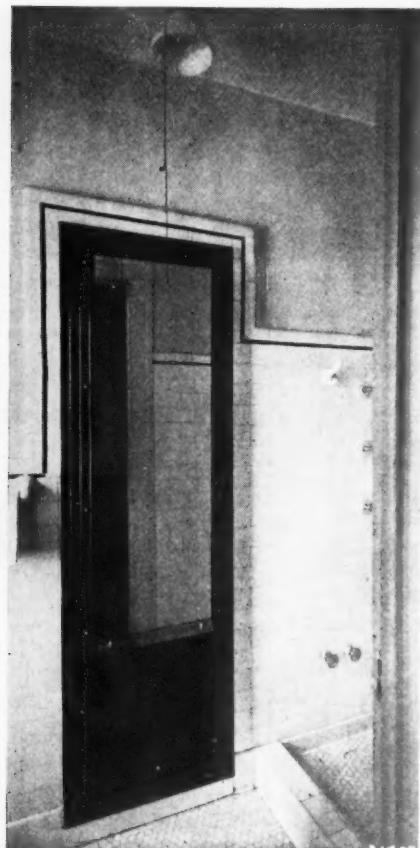
# Space Saving Lavatories in the Argyle Shore Apartments

TWO more apartments to the floor than would have been possible with the usual type of fixtures were made possible in the Argyle Shore Apartments, in Chicago, by the use of space saving lavatories, in the bath rooms. Just what this means to the apartment building owner can be easily estimated by multiplying the rent of the average kitchenette apartment by two and again by the number of floors. This gives an idea of the increased income resulting from this installation.

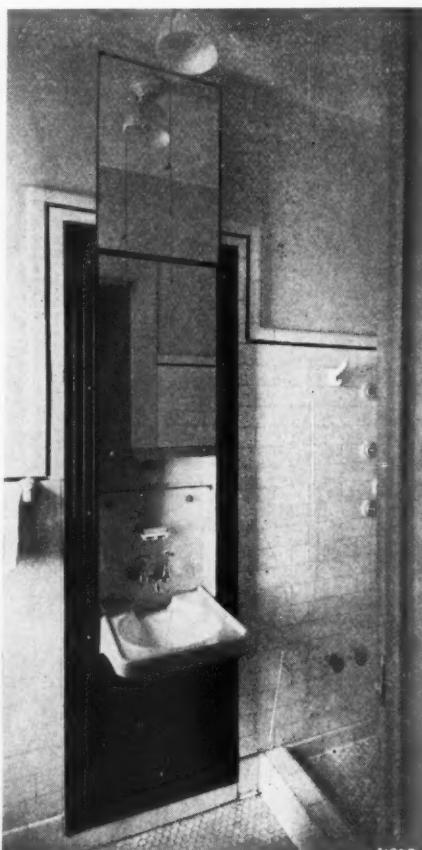
In the compact kitchenette apartment it is highly important that the bath room door swing into the bath room in order not to obstruct the living room. This demands a definite amount of clearance of the bath room fixtures and definitely limits reduction of the dimensions of the bath room. In the case of the Argyle Shore apartments narrower bath rooms were used than would have been possible with a standard lavatory.

These bath rooms are 8 feet 11 inches long and 3 feet 6 inches deep. At one end there is a shower stall and at the other end the toilet seat. The lavatory is placed in the wall opposite the door and, when folded into the wall, permits ample clearance for the door to open in.

Bath rooms in each two apartments



When Closed the Lavatory Is a Neat, Mirrored Panel in the Wall.



When Opened This Installation Offers All That Could Be Asked.

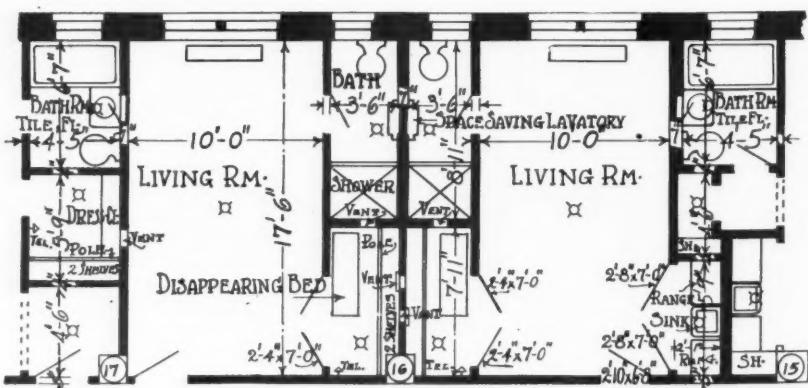
were placed against the same partition wall and the lavatories placed back to back in this 7-inch wall. The lavatory used is illustrated here in both the open and closed position, when closed it is practically flush against the wall and is covered by a mirrored panel. For use the panel is pushed up and the bowl dropped.

When open the lavatory is a complete fixture with white enamel bowl, mixing faucet, soap tray and a glass shelf. The bowl is drained by merely lifting it into the recess and since it must be lifted into place to close the lavatory there is no danger of dirty water being left standing in the bowl.

This lavatory is furnished in a number of finishes suitable for use with various wall finishes and woodwork. Its use is not confined to the compact bath room and it will be found applicable to various needs in both new and old buildings. In the home it solves the problem of the overworked bath room. With a private lavatory of this type in each bed room the usual bath room rush is relieved, especially at the important morning hour when every member of the family must make his preparation for the day.

On the first floor and in other places where a lavatory is an advantage but where space cannot well be sacrificed for the ordinary installation, it is just the thing to take care of the situation.

All of these advantages are in addition to the question of economy for this lavatory can be installed at a comparatively low cost both for the fixture and for the work of installation. Another point of economy is in the saving of valuable and expensive space which, in the case of office buildings and apartments, increases the rental area and hence the income.



CORRIDOR

This Section of the Argyle Shore Apartments Shows How the Narrow Bath Rooms Are Arranged with the Lavatories Back to Back in the 7-Inch Wall.



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The brick house always looks more valuable than one of less dignified and permanent materials. Naturally, because people think brick costs more.

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Nor do you sacrifice beauty when you build with Common Brick. Leading architects are using this natural, native material in the mansions of the wealthy. New

brick bonds and patterns reveal real beauty in Common Brick.

Build houses that look more expensive than they are—with Common Brick. You'll sell these houses quicker, at a better profit.

Send for the books listed below. They will show you how Common Brick *combines* these five advantages:

- 1—Burned-in Beauty.
- 2—Permanence.
- 3—Low Cost—First and Last.
- 4—Wide Adaptability.
- 5—Highest Resale Value.

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Seattle, Wash. . . . . 913 Arctic Bldg.  
Springfield, Mass. . . . . 301 Tarbell-Watters Bldg.

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Cleveland, Ohio

Ask us to put you on our "Builders' Register"—so that we can refer local brick house prospects to you. This Association refers thousands of such inquiries to builders each year.



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"Brick Silos"—(10c)—  
"Multiple Dwellings of Brick"—(10c)—  
"Hollow Walls of Brick"—(Free)—  
Check above and send for the books you need  
use brick with economy.  
Write plainly your name and address here.

# The Importance of Glue in the Building Industry

**B**EAUTIFULLY figured woods in the doors, wood-work, wainscoting and furniture of modern American homes are so familiar a part of our every day life that we simply take them for granted and rarely think what it is that makes it possible for us to enjoy them. Solid mahogany, walnut and similar woods are so expensive that they would be possible for only the few who are possessed of considerable means were it not for the development of inexpensive veneers and plywoods.

Veneers and plywoods bring these materials within the means of the average American home owner and at the same time give him doors and other trim more durable and warp resistant than solid wood. Going one step farther, production of inexpensive veneers and plywoods has been made possible through the development of satisfactory glue which can be produced at a low cost and applied by inexpensive methods.

Without suitable glues veneers and plywoods would be impossible. Plywood is made by gluing together two or more pieces of wood, each piece being termed a "ply." In practice three or five pieces are generally glued together, although for certain purposes, such as the rims of grand pianos and air craft propellers, a greater number of plies are used. In joining the plies they are so placed that the grain of the wood in each piece runs in a different direction from the grain of the pieces next to it. This makes the strongest possible construction and a piece of plywood is generally stronger than a piece of solid wood of the same thickness. In fact, most solid woods can be split easily while it is practically impossible to split plywood.

Naturally the beauty of the plywood depends upon the woods selected for the face or outside piece while the dependability is determined by the inner plies and the glue. Because of this fact, thin veneers of finely grained woods may be used for the face and equally strong, but less expensive woods can be used for the inner plies. In this way a piece is obtained which gives all the beauty of the finest woods at a comparatively low cost. If suitable glue has been used and the gluing has been done in the proper manner the piece will have as much, or greater, strength and performance as the more costly solid wood.

Until about 20 years ago the adhesive commonly called animal glue was used in woodworking plants making plywoods and veneers but in the last 20 years vegetable glue has been developed and is extensively used for this purpose with the result of reducing the cost of production.

The discovery of vegetable glue came as a result of experiments in raising cassava in Florida, for the purpose of manufacturing starch. Cassava is a woody shrub with tuberous roots which form in clusters at the base of the trunk and resemble gigantic sweet potatoes. From these roots tapioca, starch and other products are made. The

project of producing cassava starch in Florida proved a failure and the experiment was abandoned but one man noticed that the juice from the tuber was exceedingly sticky and conceived the idea of making a commercial vegetable glue from it.

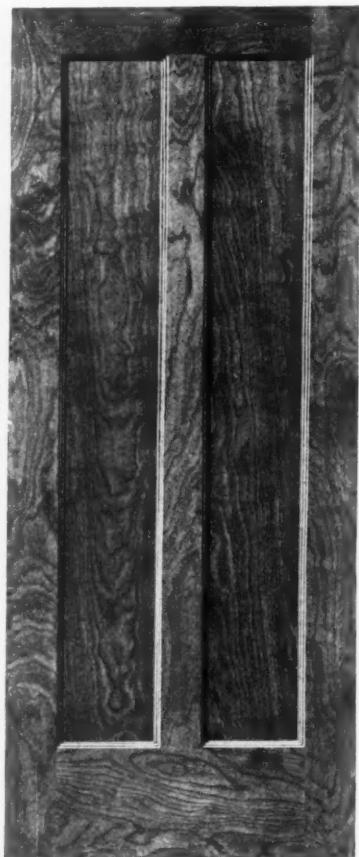
After working along that line he interested a manufacturer of cheap plywood and went into experiments on a large scale and finally perfected a product which was suitable for that grade of work. This did not satisfy the discoverer, however, as he was convinced that he could produce a glue suitable for the highest class of plywood work and he finally interested a manufacturer of sewing machine cabinets who saw the possibility of a material to replace the higher priced glue then in use. With this assistance he was able to perfect the vegetable glue, until it was adapted to the highest class of work and it has been used exclusively by this manufacturer of sewing machine cabinets since 1907. These cabinets are shipped "in the white," as well as finished, to all parts of the world and have withstood the effect of sea air, the humidity of the tropics and other severe tests in a most satisfactory manner.

With the successful development of vegetable glue for high class work it was adopted by plywood manufacturers with a reduction, running as high as 20 per cent in glue room costs. During the experimental periods it was found that on account of the heavy body of vegetable glue it could not be worked successfully on the type of glue converters and spreaders then in use and it was necessary to develop new machinery. It was the development of this machinery which enabled the general adoption of vegetable glue.

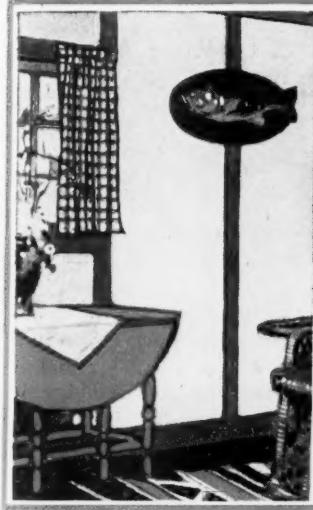
A number of advantages in the use of vegetable glue are pointed out by the manufacturers. Its adhesive qualities are equal, if not superior, to other glues. It joins the plies so firmly that when an attempt is made to separate them the wood breaks before the glue line gives way. Its price per pound is less than others.

As vegetable glue is applied cold it is possible to eliminate the warming of stock and heating of cauls which is necessary when animal glues are used. Also, it does not deteriorate in its dry state, nor after it is converted. If necessary, a mix may be left standing many days and with a few minutes' agitation it is ready to use. Once mixed it stays mixed until used in joining the wooden surfaces. Being a glue rather than a cement, it is not as hard on cutting tools as some adhesives. It is more water resistant than animal glue and for all practical purposes it is sufficiently waterproof for making furniture, doors and all other such high class work.

In the 20 years since its discovery vegetable glue has established itself as an important material in the building field with the result that practically 5,000,000 pounds were used in the building field during the year 1925.



**Beautiful Patterned Doors of the Finest Woods Are Brought Within the Means of the Many by the Use of Glue Which Makes Possible Satisfactory Plywoods.**



Make the Summer Home Attractive with  
Genuine Beaver Fibre Wall Board



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Prove the true economy of Beaver Products for walls, for roofs. Test them. Compare them. Demand the real facts. Know why Beaver Products will be a sound, long-term investment.

For walls of beauty and long life there is time-tested Beaver Bestwall, "The Superior Plaster Wall Board," with the better surface for decorating.

For quick remodeling that *lasts* there is famous Beaver Wall Board, identified by the familiar Red Beaver Border. Comes plain and extra thick; also *tiled* for walls in bathrooms, kitchens, etc.

Beaver Gypsum Lath with its heat-, cold- and sound-retarding qualities, forms an ideal base for walls of Beaver American Plasters.

And for roofs that are fire-safe, weather-tight and of unusual beauty, Beaver Slabs and Shingles offer a wealth of opportunities.

We invite you to personally test and compare these Beaver Products. "Consult your Beaver Products dealer," or write for samples and literature. Dept. 1805.

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PRODUCTS  
PLASTERS - WALL BOARDS - ROOFINGS



# MOTOR TRUCKS AND TRAILERS

## Inspection Reports Aid Truck Maintenance

MUCH has been said and written about the importance of maintenance in truck operation. Every truck should be given the best possible maintenance service for it is only by so doing that it can be kept on the road without expensive delays and operated at the lowest cost per mile. The truck that is given careful maintenance is an invaluable aid but the truck that is neglected is a heavy expense and a trouble maker because of its liability to break down at just the time when you are counting on it for important work.

There are certain matters of maintenance which are purely routine and for which there is never any excuse for neglect. These include such things as the regular oiling and greasing, testing and filling of batteries, care of tires, washing, checking of gas and oil consumption, grinding of valves and removal of carbon. All these things must be done regularly, at intervals, and any driver is capable of keeping track of them and seeing that they are attended to.

But these services are not enough to insure constant, economical operation. From time to time various adjustment and repairs are needed. Some of these are serious in themselves while others are serious in that, if neglected, they will result in more serious damage to the truck. In many cases it is impossible to tell when such work will be required and at times the need of it is not immediately apparent to the driver. There is just one way, therefore, to make sure that this maintenance is given promptly, when it is needed, and before the need has developed into something

serious. This way is by regular thorough inspections. Inspection, then, is the key to first class maintenance and reliable, economical operation.

Inspections should be made by a first class mechanic and according to a regular system. Every good service station has such a system and mechanics who are capable and if you do not have a capable mechanic in your employ it would be wiser to have inspections made by the service station at regular intervals. If you do have a good mechanic, however, you can very well have him make the inspection right in your own garage.

Making your own inspections, you should take care to see that every inspection is thorough. Even a good mechanic who is careful in his work may overlook some point for a truck is a complicated piece of machinery and there are many points to be checked up. If some point

TRUCK INSPECTION REPORT				Reason for Inspection	
OWNER		Br. or Dist.		Routine.....	
ADDRESS		Inspector		In for repairs.....	
BUSINESS		Driver		Accident.....	
Body	Roads	Daily Mileage	Truck New or in Use Yrs.	Mo's	Chassis No.
1	Front Axle	17	Radius Rods	30	Timing Gears
2	Front Wheels	18	Carburetor	31	Valves, Spgs., Tap'ts
3	Front Tires	19	Magneto	32	Oil Leaks in Engine
4	Front Springs	20	Spark Plugs	33	Oil Pump & System
5	Rear Axle	21	Generator	34	Oil—Quantity
6	Rear Wheels	22	Starting Motor	34A	Oil—Condition
7	Rear Tires	23	Starting Switch	34B	Oil—Mi. per Gal.
8	Rear Springs	24	Instrument Panel	35	Oil Pan
9	Steering Gear	25	Engine Power	36	Fan and Belt
10	Spark & T. Controls	25A	Ignition	37	Water Pump
11	Brake Control	25B	Carburetion	38	Governor
12	Brakes	25C	Compression	39	Cylinder Block
13	Clutch Control	1	2	40	Cylinder Sleeves
14	Clutch	3	4	41	Pistons & Rings
15	Transmission	27	Connecting Rods	42	Manifolds & Ht. Jkt.
16	Gear Shift	29	Wrist Pins	43	Gaskets
Check above if O. K. If not, state details below, referring to item numbers.					

Here Is Shown, in Reduced Size, the Contents of the Inspection Report Sheet Used by the Service Stations of an Important Truck Company. The items are selected to insure a thorough inspection without undue clerical work in filling out the blank.



## You'll get better mileage from Kelly Kats

This isn't a mere claim. It is the statement of a fact that has been proved by the year in and year out experience of thousands of truck owners during the past seven years.

And Kelly Kats don't discriminate. They stand ready to give you the same sort of service they are giving other truck owners.

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250 West 57th St.

New York, N. Y.



**KELLY-SPRINGFIELD TIRE CO.**

**250 WEST 57th ST.  
NEW YORK, N.Y.**

is overlooked it is always sure to be the very one that needed attention and will make itself evident by a break down just at the most inconvenient time.

The way to make sure that every inspection is thorough and complete is to provide an inspection report sheet, listing all points to be covered by the inspection and providing for each point to be checked and all repairs or adjustments that are needed reported in full. In preparing an inspection sheet every item should be carefully considered to make sure that they are neither too broad nor too detailed. Items that are too broadly covered on the inspection sheet do not encourage a thorough inspection while too complicated and detailed items make the filling out of the sheet overshadow the actual work of inspection.

The service stations of large truck companies all use these inspection report sheets and a very good way of preparing your blank is to secure such a sheet from the company which has supplied you with trucks and adapt it to your particular requirements. The blanks used by these companies are the result of many years of experience in servicing many trucks used for every imaginable purpose. They know just what attention the truck requires and just what will be most effective in facilitating the inspection.

The contents of one of these inspection reports is reproduced on these pages. It is used by the service stations of a prominent manufacturer and is standard for all service stations. Each report is made out in triplicate, one copy being retained by the service station, one going to the truck owner and the third being sent to the factory, as a basis for checking the performance of the trucks in operation and experimenting to improve the truck.

The truck owner will not, of course, require as many copies but the form can be used with few changes. On one side of this sheet, which is a standard 8½ by 11-inch page, is the inspection report proper. This provides for the identification of the truck and complete information on the sort of service to which it is subjected, roads, daily mileage and so forth. Below this in four columns are

IMPORTANT	
Please fill in the information requested below on every truck that you inspect or work on:	
1. CONDITIONS COMPLAINED OF:—State the complaint made by owner or operator, such as "Truck won't pull," "Engine hard to start," "Engine knocks," "Uses too much oil or gas," "Noisy rear end," "Transmission won't stay in gear," "Body sags to one side," "Truck steers hard," "Parts broken or damaged."	
2. CONDITIONS FOUND:—State what you found and what you consider to be the actual cause or cause of such complaints.	
3. ACTION TAKEN:—Tell what you did to correct the trouble described in Section 2.	
4. RESULTS:—Tell briefly the results of operations described in Section 3.	
5. SUGGESTIONS OR REMARKS:—Jot down any suggestions or remarks you care to make for the benefit of the owner, service station manager, or the factory.	

The Reverse Side of the Report Sheet Shown on Page 232 Contains the Information Blanks Shown Here. When these are filled in they form a complete, permanent service record of the truck.

listed 59 items for inspection. Besides each item is a column space for checking. As each item is inspected and found perfect it is checked in this column.

In case a defect is found the check is omitted and the item number is entered in the space at the bottom of the sheet with a statement of the details which require attention. It is then a simple matter for the repair man to run over the report and attend to each item that has been listed.

On the reverse side of this sheet there are four items of information to be filled in. These are: 1, conditions complained of; 2, conditions found; 3, action taken; 4, results; 5, suggestions or remarks. As can be readily seen, this sheet, when properly filled out, furnishes a complete record of the truck and all inspection sheets should be kept filled as a permanent record.



### Treating Conserves Lumber

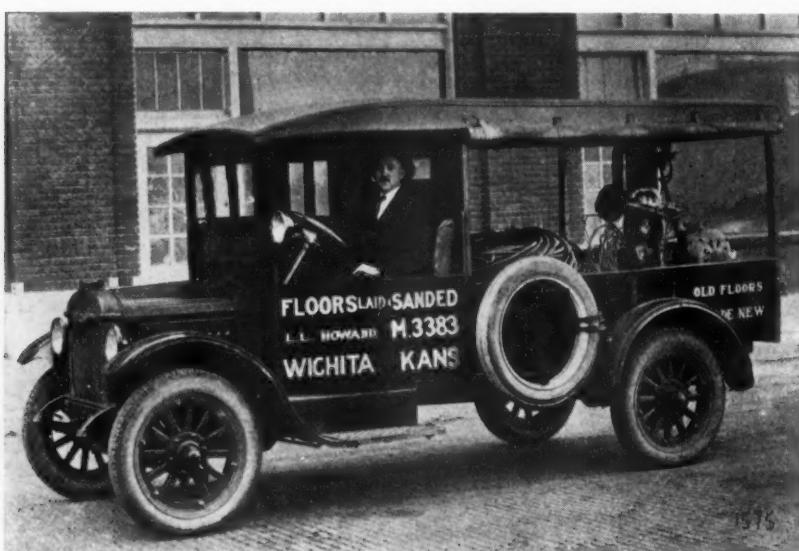
TREATING lumber, timber, ties, poles and other forest products with preservatives is among the important measures designed to aid in the conservation and more thorough utilization of the nation's forest supplies. If timber which untreated will last 30 years in a structure can be made to last 60 years by creosoting or other form of treatment, it means that this phase of utilization will make one tree suffice where otherwise two trees would be required.



### House-Owning vs. Apartment Renting

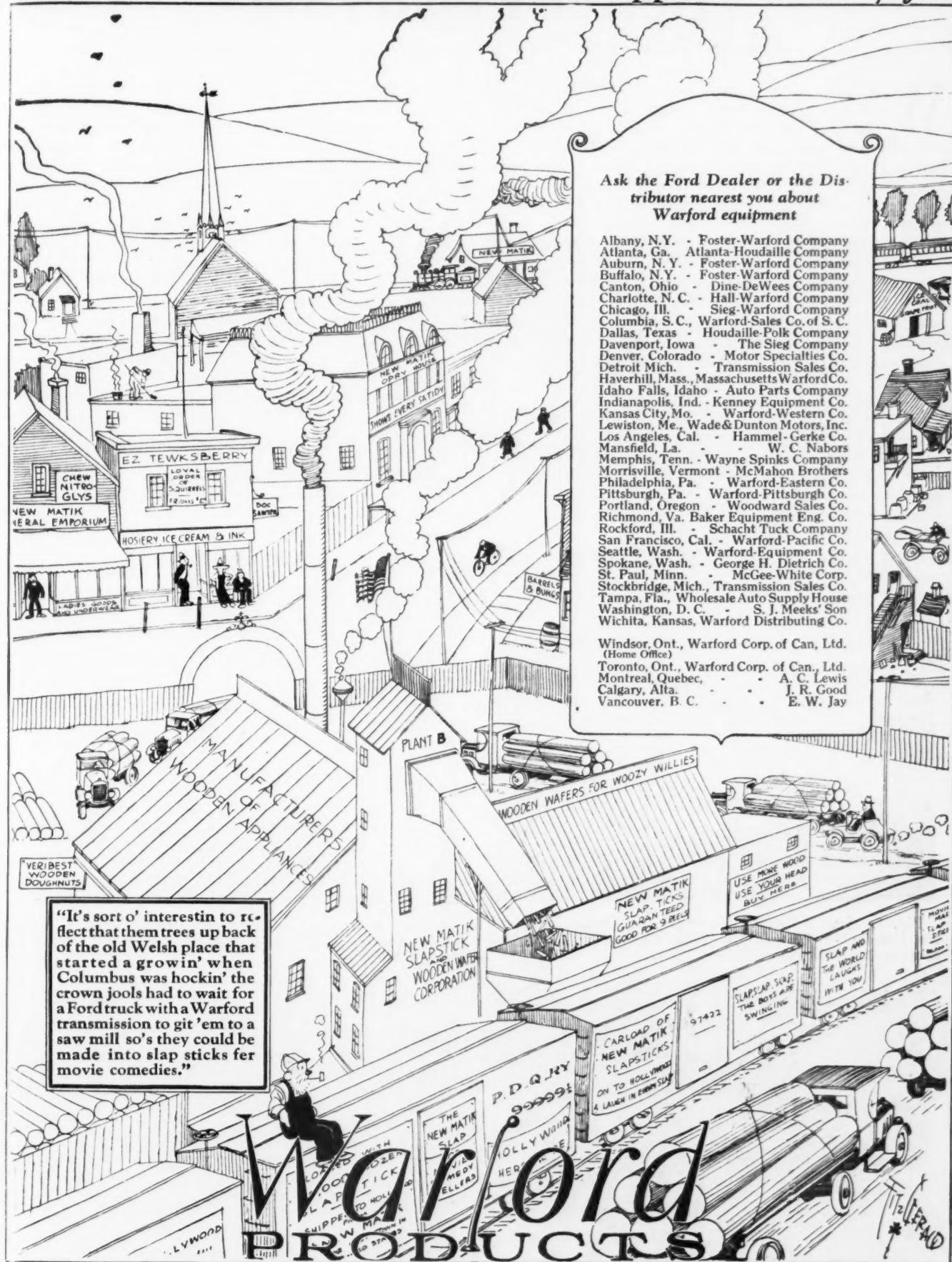
SOME light is thrown on the perennial question of whether it is cheaper to buy than to rent by some building cost figures compiled by the Alexander Hamilton Institute, says a bulletin of the Research Bureau of the National Lumber Manufacturers' Association. According to these figures a duplex frame house may be built for as low as twenty-seven cents a cubic foot, and the highest grade detached frame house can be built for forty-four cents. High class apartments cost seventy-seven cents a cubic foot; cheap ones, forty-two cents.

It would appear from these figures that the investment in one's own house of the best quality would be only half as much as the sum on which he would have to pay interest in a high-grade apartment. In other words, it appears that a detached frame house of the best quality may be built for half the cost of an apartment suite.



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WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

# Better Plastering

## Some "Do's" and "Don'ts" on Stucco Construction

WE have, in the past, had articles in this series showing and describing construction details designed to produce satisfactory stucco construction. In the present article we will endeavor to show by illustration of actual buildings the success which comes from the observance of these fundamental rules for stucco construction and also how non-observance is apt to produce unsatisfactory results.

One of the first of the cardinal principles of good stucco construction is that stucco should not be run down to the ground but should stop at a point from nine to 12 inches above the finished grade. As a corollary, the masonry foundation should, therefore, be run up a corresponding distance above the grade. This is an especially necessary precaution when stucco houses are built on a wood frame and in the cases where a brick or concrete block base course is used, the details of the footings should be worked out so as to provide for the base course.

Reference to preceding articles in this series will disclose satisfactory details to cover this point. There, too, will also be found the many reasons for having a substantial foundation wall, and for special attention to this important part of the structure.

However, as a means of illustrating the right and wrong

way of taking care of this cardinal principle of design, photographs of actual construction will prove more effective. Fig. 1 shows a building where the stucco has been carried down to or below the grade line with no permanent part of the structure to limit its bottom edge. Probably the concrete foundation was stopped at about the original ground level and the temporary wood strip, later removed, was used as a ground and the lower limit for the stucco.

After the building was completed and the site graded it was found, as shown in the illustration, that in some places the bottom of the stucco was covered and on others it shows as an irregular overhang over the concrete foundation. The lower portion of the stucco is certain to be discolored and splashed up by rain, and this is the most troublesome in regions where heavy rainfalls are to be expected.

The same difficulty is experienced in places where heavy snow, such as we have experienced lately in the greater part of this country, is encountered. Soot falling on it will, when the snow begins to melt, be absorbed into and discolor the stucco. A glance at the snow scene in Fig. 2 clearly indicates what would happen if the stucco had been brought all the way down to the grade line instead of being stopped well above on the cobble-stone foundation, which, by the way, suggests a very pleasing



Fig. 1. Stucco Carried Down to the Grade Line with No Permanent Part of the Structure to Limit. It will become badly discolored.

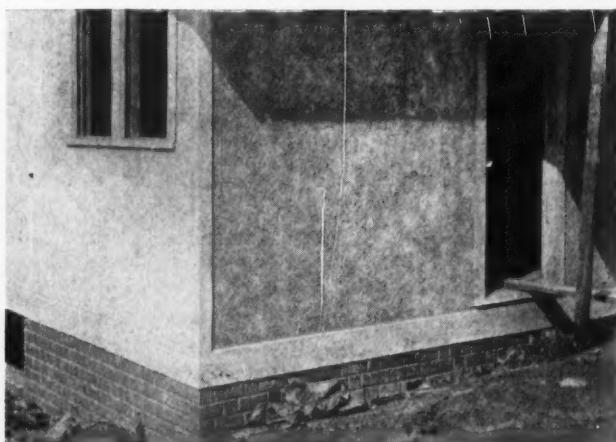


Fig. 3. A Brick Base Surmounted by a Wooden Water Table Assures Clean Stucco After the Lot Has Been Graded Up.



Fig. 2. Unless the Stucco Is Stopped Above the Grade Line as in This House, Soot Falling on the Snow Will Stain It.

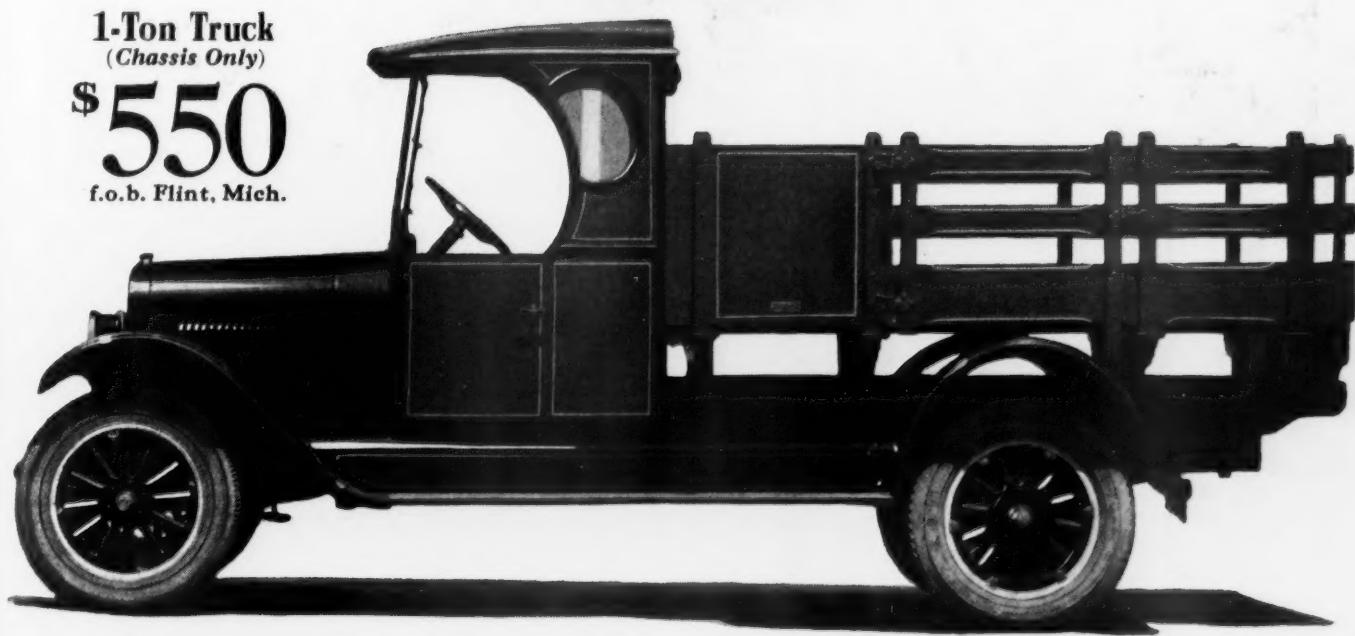


Fig. 4. A Good Base Course and Brick Shoulder Course Protect These Stucco Walls Where the Site Has Been Terraced.

*for Economical Transportation*

**1-Ton Truck**  
(Chassis Only)

**\$550**  
f.o.b. Flint, Mich.



## Modern Design *assures* Low Operating Costs

Chevrolet's modern design is your strongest assurance of dependable delivery at low cost.

When you invest \$550 in a Chevrolet one-ton truck chassis you get the strongest truck chassis available today at this low price.

You get special truck type construction—heavy frame, extra-strong rear axle, heavy-leaved springs and over-sized brakes.

You get the greater flexibility of Chevrolet 3-speed transmission—the abundant power of Chevrolet's valve-in-head motor—the easier, safer handling of Chevrolet's semi-reversible steering gear and the greater stability of springs, set parallel to the load.

Only Chevrolet offers you these quality features in a one-ton truck chassis at \$550.

CHEVROLET MOTOR COMPANY, DETROIT, MICHIGAN  
*Division of General Motors Corporation*

# CHEVROLET TRUCKS

HALF  
TON

## World's Largest Builder of Gear-shift Cars



Fig. 5. An Otherwise Neat Stucco House Badly Discolored Around the Base Because of Being Too Low.

and satisfactory type of base course construction.

Figure 3 shows a close-up of another type of base construction with brick below a wooden water table, with the stucco above. When the site is graded, it is likely that the dirt in the right foreground will be cut down to the level of the sills of the basement window to the left and graded up only at the steps leading to the doorway at the right.

Figure 4 is another illustration showing how the problem of the base course is taken care of where the site is to be terraced. It differs from Fig. 3 in that a brick shoulder course is used in place of the fascia board. In passing, it should be observed that such a shoulder course of dark red or deeply colored face brick offers a very pleasing color and texture contrast for the stucco. In Fig. 4 this is further accentuated over door and window openings.

Figure 5 shows a neat, small stucco home with indications of discoloration around the base because of its being so low. Undoubtedly, there will always be a decided tendency for the stucco at the ground to be discolored especially at the part of the building at the left hand side of the picture because a water pocket is likely to form between the house and the terrace and it will probably require hosing off after every rain to present a satisfactory

appearance. A terrace rising at least six inches above the street curb at its highest point, with a base course rising eight inches above the terrace, would have assured absolute permanence



Fig. 6. Contrast the House at the Left with This, with Its Clean-Cut, Concrete Base Course and Water Table Protection.

to the stucco at the footing, and, if anything, added to the architectural effect.

In contrast with the preceding, observe the effect of the Dutch Colonial shown in Fig. 6 with its clean-cut concrete base course and water table.

The second of the cardinal points of good stucco design is that proper overhang and drip should be provided for all window sills and other horizontal woodwork, and some stop should be provided at the end to avoid the concentration of water over end of the sill.

Streaks which disfigure stucco are most commonly found at the ends and under window sills and under copings where these have not been provided with sufficient overhang to shed water beyond the face of the wall, but instead have tended to concentrate the water at particular points or have allowed the water to run down the face of the stucco and stain it with smoke, soot and grime collected from the window sills and copings.

In Fig. 7 is shown a particularly severe case where scouring stains have been produced by failure to observe this point. In manufacturing cities and in other localities where large quantities of coal are consumed, the discoloration due to smoke presents a problem which demands a positive solution because of the continued expense of washing the entire stucco wall in order to eliminate traces of the scouring action at these places.

Manufacturers of millwork have enlisted their aid and it is now possible to secure double hung and casement windows in which the details are carefully worked out so as to insure sufficient projection of the sill beyond the face of the stucco. The importance of having a clean-cut, sharp edge on the drip will insure that water will break and fall instead of coursing down the face of the wall, cannot be over-emphasized. A satisfactory detail is shown in Fig. 8.

The matter of supplying stops at the ends of window sills and copings is not difficult of solution. A very simple one is illustrated at the right hand of Fig. 8. It consists merely of a sheet metal stop preferably of a non-corroding metal nailed at the ends of the sills. Small wooden blocks can also be used with considerable degree of success.

**T**O justify investment in small houses, good architecture should never be separated from good construction. Either without the other means dollar waste and the sacrifice of personal comfort and convenience."



Fig. 7. Scouring Stains Caused by Lack of Sufficient Overhang of the Sills.

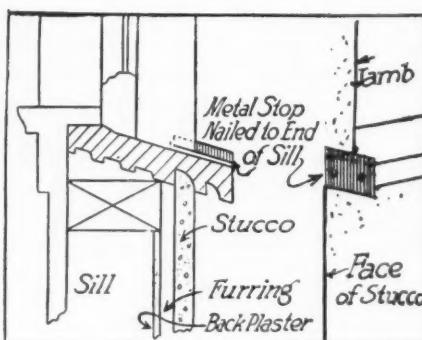


Fig. 8. A Satisfactory Detail with a Water Stop at the End of the Sill.

# Greater COMFORT in- GMC Big Brute

NEVER before has a driver had a cab like this. *In just a moment he can enclose himself completely—without shutting off his view of the road or traffic, and without leaving his seat.*

The bottom panel slides down, the upper panel up—opening the cab completely. Nothing is in the way of the driver when the cab is open.

#### An all Steel Fisher Cab

—which can be completely closed, or opened, in a moments time. A comfortable “coupe” for the driver. *And that means increased efficiency.*

#### Real Seats

—built with Marshall Cushion Springs, both seat and back completely upholstered in Spanish type Fabricoid. The seats are adjustable.

#### One Piece Windshield

—clear vision type, with automatic windshield wiper. *The driver can see where he is going, and what is coming, without straining his neck.*

#### Complete Electric Lighting —Magneto Ignition

—each independent of the other. Electric head



lamps, with both bright and dim connections, electric tail lamp, electric dash lamp, truck type generator and battery.

#### Easier to Steer

The steering gear is a worm and split nut type—irreversible—with a big, corrugated steering wheel. *It's as easy to steer Big Brute as to steer a small pleasure car.* The tie rod is back of the axle—positively protected from damage through accident.

Products of  
Yellow Truck and Coach Manufacturing  
Company  
subsidiary of General Motors  
GMC Big Brute, 3½ and 5 ton trucks  
GMC 1, 1½ and 2½ ton trucks - Yellow Cabs  
Yellow Coaches - Yellow Light Delivery Trucks  
Hertz Drivervself Cars - GMC 5 to 15 ton Tractors

## A General Motors Product

Sold and Serviced Everywhere by Branches, Distributors and Dealers of

**GENERAL MOTORS TRUCK COMPANY, PONTIAC, MICHIGAN**

A DIVISION OF YELLOW TRUCK AND COACH MANUFACTURING COMPANY

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

© G. M. T. Co., 1926

### A Simple Roof Framing Square

A ROOF framing square, which is designed to relieve the user of all mathematical calculations, has recently appeared on the market. With its use, the manufacturers claim that all cuts for any ordinary roof may be marked as easily as though a bevel square was already set for the angles wanted.

This square is triangular in shape, measuring about 7 inches along each side and may also be used as an ordinary try square. Along the edges of the square, and also along slotted openings parallel to the edges, are rows of markings, each row numbered from one to 14, and corresponding to the inches rise per foot of run. The inch rise being known it is only necessary to use the same number for all cuts on each roof.



Here Is a Simple Roof Framing Square Which Is Said to Take All the Difficulty Out of the Framing of All Ordinary Roofs.

There are only two major positions of the square for all cuts. The top corner of the square is held against the rafter for all top cuts and the bottom corner is held against the rafter for all bottom cuts. The method of use is to hold either the top or bottom corner, as the case may be, against the rafter and, using it as a pivot, swing the square around to bring the proper mark directly over the edge of the rafter. The angle is then described by the edge of the square.

Each row of markings is separate and plainly stenciled with the name of the cut it gives. Being made of aluminum and brass the lettering cannot become rusted or difficult to read. The square is made of aluminum, almost  $\frac{1}{8}$  inch thick, making it light but sufficiently strong so that it is not damaged by being dropped from a scaffolding or other rough usage.

A booklet containing a complete table of rafter lengths is furnished with the square. Complete lengths of all rafters are shown from 1 to 14 inch rise per foot run and in widths up to 48 feet, in feet and inches. The price of the square is only a little more than for an ordinary try square. ♦

### Reliable Rapid Acting Vise

THE rapid acting vise illustrated here is equipped with a two-piece, cam-operated nut. This nut is a new invention, being composed of only two pieces, its mechanism is simple and absolutely reliable in operation and will not get out of order as there are no small parts to wear out. The nut proper is of phosphor bronze and the nut sleeve is made of gray iron.



A Rapid Acting Vise so Simplified that There Are No Small Parts to Get Out of Order or Wear Out.

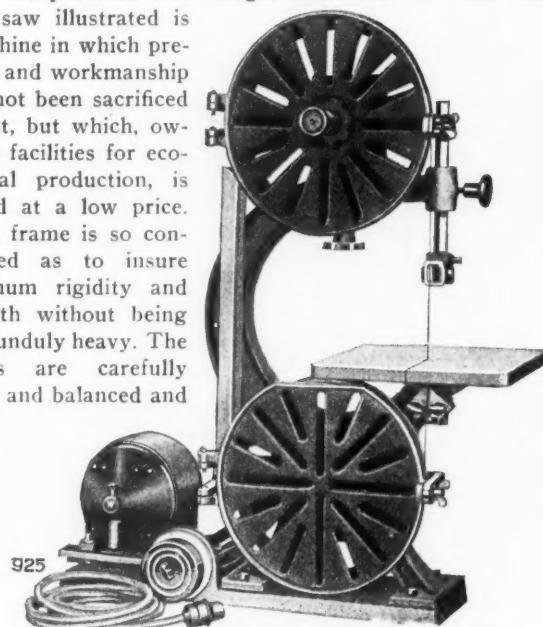
This vise possesses instantaneous adjustment and is continuous in action. The nut is released and completely disengaged when pressure on the work is removed by a slight reverse movement of the handle. When pressure is applied the nut engages and locks the screw firmly and rigidly in position.

There are no pawls, racks or triggers to wear or break and the guides are of cold rolled steel. The jaws are of the best gray iron with the working surfaces ground and finished. The special design of ribs and jaws secures a minimum deflection or spring under pressure, as well as minimum weight. ♦

### Bench Band Saw

A SMALL band saw, which may be operated from a lighting current or by belt from any kind of power, is so universal in its use as to be almost indispensable in any shop not provided with larger machines. In the bench band saw illustrated is a machine in which precision and workmanship have not been sacrificed to cost, but which, owing to facilities for economical production, is offered at a low price.

The frame is so constructed as to insure maximum rigidity and strength without being made unduly heavy. The wheels are carefully turned and balanced and



This Bench Band Saw Is a Low Price Machine in Which Precision and Workmanship Have Not Been Sacrificed to Cost.

are equipped with rubber bands. The table is of cast iron planed true, with babbitted throat for saw. It tilts to any angle up to 45 degrees and is held by a positive clamp. The alignment of upper wheel is easily maintained by means of a convenient hand wheel and the saw may be trained while the machine is in motion. The lower wheel is also adjustable for permanent alignment.

The saw tension is regulated by means of a hand wheel, screw and compensating spring. It may be adjusted while the saw is in motion. The wheel guards are hinged to rigid frames, are easily opened for access to the saw and when closed are locked by thumb nuts which prevent vibration or noise. They cannot sag or get out of place.

The saw is also protected by a long guard at the back between upper and lower wheels. The machine is regularly equipped with plain guide above and below the table but roller guide above the table will be furnished at extra cost.

When furnished with electric power, the motor and starting switch are mounted on a cast iron sub-base to which the machine is also attached, making a self-contained unit. The small endless belt from motor drives the lower shaft

# JOHNS-MANVILLE

## Asbestos Shingles



*Insurance  
underwriters  
lower rates for FIRESAFE roofs*

THE insurance underwriter no longer calmly watches the public build as they please. He actively advocates fire-safe roofs and offers inducements in lower rates for safe roofing construction.

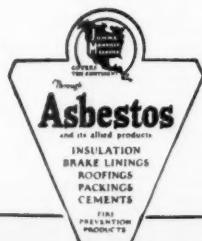
His warnings added to those of other fire prevention authorities are having their effect. The public is demanding more asbestos roofs than ever.

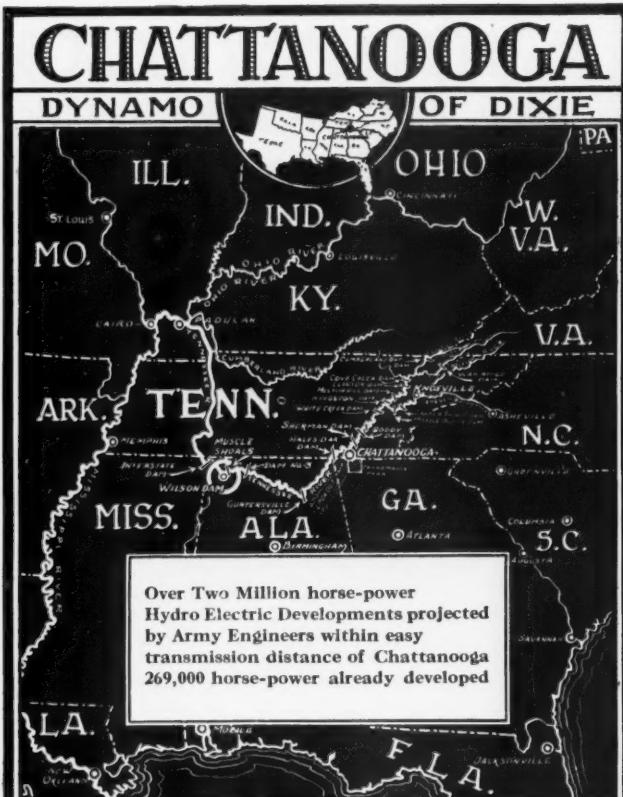
Good thing to sell what the public wants, isn't it?

JOHNS-MANVILLE Inc., 292 Madison Ave., at 41st St., N.Y.C.

*Branches in all large cities*

For Canada: CANADIAN JOHNS-MANVILLE CO., Ltd., Toronto





## Sell The South from Chattanooga!

The eminence of the "Dynamo of Dixie" as a great center of diversified manufacture, caused by an abundance of cheap hydro-electric power, raw materials, real American labor and other marked industrial assets, such as favorable rail and water freight rates, is greatly strengthened by Chattanooga's highly strategic location as a distributing point for the entire South.

With a population of 41,211,000 within a 500 mile radius, Chattanooga is in intimate touch with all southern points as well as principal centers of other sections. The city's superb geographical location is supplemented by ideal transportation facilities in all directions.

Sales executives desiring a greater volume of business from the South, should investigate very carefully the advantages of Chattanooga as a site for sales offices, warehouses, assembly plants and factories.

*Full information regarding Chattanooga and the advantages offered any particular lines of business, will be forwarded on request.*

### Community Advertising Ass'n

26 Chamber of Commerce Building  
Chattanooga : : Tennessee

Nearly 300,000 horse power already developed  
with 600,000 more at Muscle Shoals in  
Chattanooga's Back Yard!

COMMUNITY ADVERTISING ASS'N,  
26 Chamber of Commerce Bldg.,  
Chattanooga, Tennessee.

Send facts and literature about Industrial ( ) Commercial ( )  
Residential ( ) Tourist ( ) opportunities of Chattanooga.

Name \_\_\_\_\_

Street \_\_\_\_\_

City \_\_\_\_\_

### New Name for Old Firm

THE American Gas Products Corporation is the new name for the organization formerly known as The A. H. Wolff Gas Radiator Co. The change of name became effective on April 1, 1926, and was made in order to more clearly define the extent and variety of the gas equipment manufactured and distributed by the company. The American Gas Products Corporation will continue as the sole distributor of Ideal gas boilers manufactured by the American Radiator Company. The same line of gas appliances, including gas fired steam radiators, warm air gas radiators, radiant heaters, visible gas toasters, cookers and urn burners, will be maintained. The company is located at 376 Lafayette Street, New York City.



### A New Ambler Factory

COMPLETE equipment for the manufacture of asbestos shingles, including machinery recently developed for the making of these shingles in tapered thicknesses, is being installed by the Ambler Asbestos Company in its new factory at Asbestos, Pennsylvania, a new town on a branch of the Pennsylvania Railroad, northeast of Philadelphia, which has been created to meet the needs of the company.



### Purchase New Factory

THE Butler Laboratories, Incorporated, manufacturers of ceiling and wall clothes dryers, have purchased a large new factory at 4201-17 Avenue H, Flatbush, Brooklyn, N. Y., and will shortly vacate their executive offices at 41 Park Row, New York City. Executive, sales and administrative sections of the business will all be housed in the new building. The plant is equipped with the latest and best mechanical equipment and additional machinery will enable the company to take care of its rapidly expanding business.



### Elect Smith Vice-President

LAINE S. SMITH, who started as a salesman with the Universal Portland Cement Co., in 1908, from which he was advanced through various positions to that of general sales manager in 1915, and in which position he is credited with developing one of the most successful selling organizations in the country, was elected vice-president of the company at a recent meeting of its board of directors.



### Finance Community Hotel

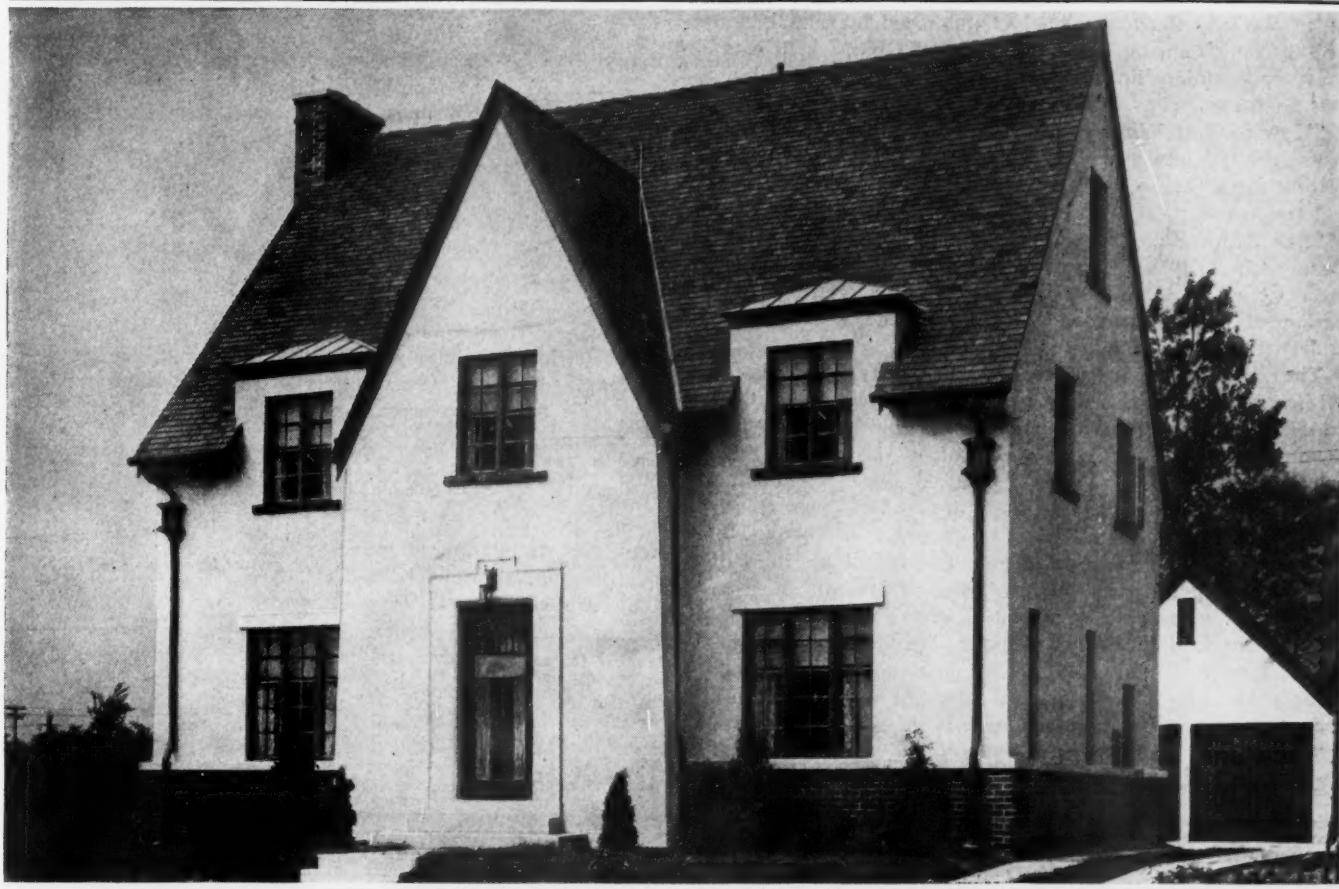
OUR more cities have recently been assured of community hotels made possible by the financing efforts of The Hockenbury System, Inc., of Harrisburg, Pa. These cities are Savannah, Ga., New Castle, Pa., Johnstown, N. Y., and Oneida, N. Y. All are sponsored by local business men's organizations.



### Will Enlarge Factory

IN order to provide for increased production facilities, the O. K. Clutch & Manufacturing Company, Columbia, Pa., has built brick, concrete and steel addition to its factory, having a floor space of 12,500 square feet. This steel sash, daylight building will have a truss roof, 40 feet in the clear, providing ample room for an electric, traveling crane in the center. With a total floor space of 22,000 square feet in the plant it will be possible to double the present volume of production on gasoline and electric hoists and gasoline and electric air compressors.

# 6 Build~Sell~Build Again



## Fenestra Casement Windows

Residence,  
Parkside Avenue,  
Detroit, Mich.  
Builder,  
Ernest E. Brown.



COMPLETE the steel window equipment of the houses you build with Fenestra Basement Windows. They admit 80% more light than wood windows of the same size. They never warp or stick, always work easily, close weather-tight, and never wear out. They help sell the house because everyone wants a daylit basement.

**F**ENESTRA will help you do it! Your prospective buyer doesn't need to be told that Fenestra Casement Windows make the house more attractive. He can see that. Nor does he need to be told that they ventilate better. Opening a casement wide tells him *that*. And if his wife is along, she notices that these better steel windows can be washed from the inside without sitting on the sill.

Home-buyers agree they're modern windows for modern homes.

And these selling advantages are easily available. At a surprisingly low cost you can put Fenestra Casements into the homes you build—large or small—and realize on their beauty and utility when the time comes to sell. Send for the Fenestra catalog and casement window details. Use them when you build.

DETROIT STEEL PRODUCTS COMPANY  
C-2260 East Grand Boulevard, Detroit, Mich.

**fenestra**  
for homes, large and small  
shops and small factories  
garages and service stations  
stores and other buildings

### Books, Bulletins and Catalogs for You

THE literature and publications listed here are available to the readers of the American Builder. They may be obtained from the firms mentioned and will be forwarded without cost except where a price is noted.

"Ancient Beauty for Modern Buildings" is the title of an attractively illustrated booklet published by The Union Metal Manufacturing Company, Canton, Ohio, which catalogs the complete line of metal columns manufactured by this company.

"How to Test Window Frames" is the title of a booklet from the Andersen Lumber Company, Bayport, Minn., setting forth the importance of window frames in substantial construction.

"The Allith Bulletin," published monthly by The Allith-Prouty Company, and its subsidiary, The Danville Malleable Iron Company, Danville, Illinois, is an interesting little periodical containing good ideas presented in a readable and entertaining form.

The Bishopric Manufacturing Company, 703 Estes Avenue, Cincinnati, Ohio, has published two new illustrated booklets. "The Renaissance of Colored Stucco" is devoted to Bishopric stucco and Sunfast finishes and their relation to the present vogue of colored stucco. "Looking Behind the Stucco" presents the story of Bishopric stucco and plaster base.

Besser Sales Company, Chicago, has issued a group of eight new bulletins descriptive of new equipment added to the Besser line since the publication of the current catalog.

The American Radiator Company, Dept. 125, 1807 Elmwood Avenue, Buffalo, N. Y., has just published a handsome new catalog describing its new line of tank heaters for domestic hot water for use with both gas and coal.

"The Story of Sani Onyx" is a descriptive illustrated catalog covering the vitreous marble product manufactured by

the Marietta Manufacturing Co., 80 Brookside, Indianapolis, Ind.

"Ambler Asbestos Shingles" is the title of a booklet illustrating in colors the roofing manufactured by the Asbestos, Shingle, Slate and Sheathing Company, Ambler, Pa. It is prepared and enclosed in a special folder for filing under the A. I. A. Classification.

"The Business of Buying a Store Front" is a new booklet published by the Zouri Drawn Metals Company, 1608 East End Avenue, Chicago Heights, Ill., treating this problem in a new way. It is most attractively illustrated in colors from oil paintings of actual installations.

"The Novo Price List Catalog" contains illustrations and prices of all parts used in Novo engines and outfits manufactured by the Novo Engine Co., Lansing, Mich.

J. G. Braun, 609 S. Paulina St., Chicago, has issued a supplementary catalog, No. 20, covering part of its line of wrought iron ornaments, tubing, lanterns and ornamental nails.

The Fairfacts Company, 234 W. 14th St., New York City, has issued a Fairfacts Roughing Sheet on china bathroom accessories in a form for filing under the A. I. A. classification.

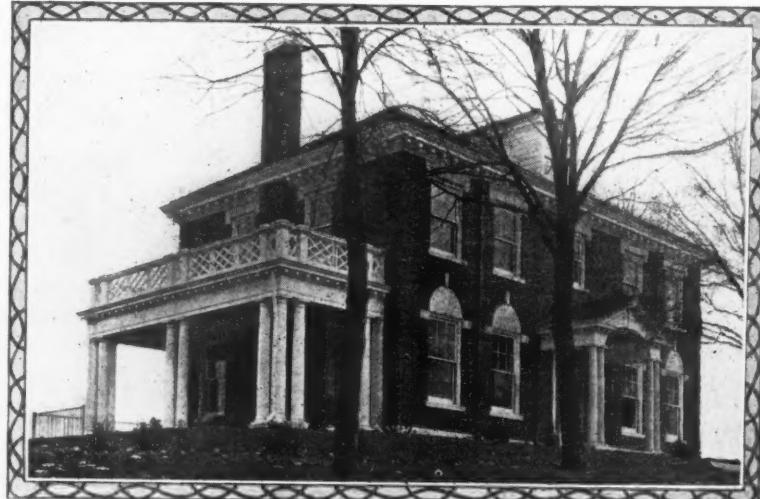
"Portland Cement Stucco" is a compilation in booklet form by the Portland Cement Association, 111 W. Washington St., Chicago, of complete information on texture and color in Portland cement stucco work including the technique of application and is handsomely illustrated in colors.

The United States Gypsum Company has just published the first issue of a new periodical, "Gypsumist," which is devoted to the use of gypsum products in building.

J. S. Thorn Company, Philadelphia, Pa., has issued a booklet on "Thorn Casements for Residences and Apartments" containing detail drawings and descriptions of its various units.

Beautifying the Old Battle Line

## ATOP-MISSIONARY-RIDGE



COST IS SOON FORGOTTEN—QUALITY NEVER!

Architect—LOUIS BULL  
Brick—CARLISLE-LABOLD  
DARK CHOCOLATE

Mortar Color—  
PARAMOUNT CHOCOLATE 536

### PARAMOUNT COLORS

in shades to harmonize with every make of brick.

Used by exclusive dealers thruout U. S. A.

THE LOOKOUT PAINT MFG. CO., Chattanooga, Tenn.

# Two Smashing Bargains that Should Attract Every Builder!

## “White” Built-in Ironing Board



*You'll find this the  
Biggest Bargain in  
Built-in  
Ironing Boards  
you've ever seen!*

An extremely well made Ironing Board Cabinet, complete with removable ironing board, sleeve board and broom holder. Very strong and substantial. Complete with hardware, ready to apply finish. Fits between 16 in. on center studding. Cabinet measures 14 in. wide, 5 ft. 1 1/2 in. high, 4 in. deep. Ironing Board 4 ft. 5 3/4 in. long, 12 1/2 in. wide, 7/8 in. thick. Sleeve board 24 1/4 in. long. Door is of three panel design.

“White” Built-in Ironing  
Board, F. O. B. Chicago, in  
lots of 25, each . . . . .

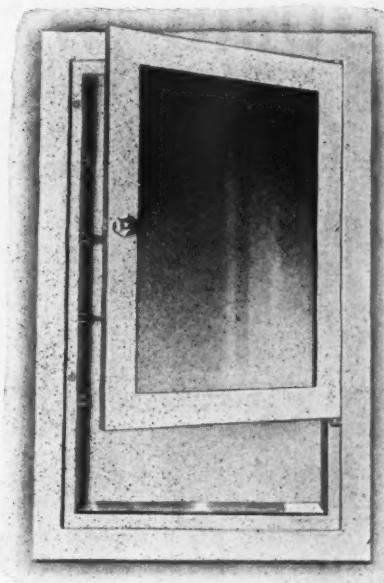
Less than 25, each \$7.25

\$7~~00~~  
7~~00~~

## “White” Steel Medicine Cabinet

*Built of  
Highest  
Quality  
Steel,  
Lacquered  
Finish*

*Has Plate  
Glass  
Shelves*



An all-steel Medicine Cabinet, finished with high grade white lacquer. Equipped with two adjustable plate glass shelves and open comb and brush shelf with plate glass bottom. Removable plate glass mirror, 12 x 16 in. in door. Door has concealed hinges, white porcelain knob and friction catch. Overall measurements 18 in. wide, 28 in. high, 4 1/2 in. deep. Builds into wall opening 14 1/4 in. wide, 24 1/2 in. high.

“White” Medicine Cabinet, F. O. B. Chicago in lots of 25, each . . . . .

Less than 25, each \$9.75

\$9~~50~~  
9~~50~~

## The “White” Door Bed Company

130 North Wells Street ~ Chicago, Ill.

Sales Agents in the Principal Cities

The “White” Door Bed Company  
130 North Wells Street, Chicago, Illinois

Please Ship { Check enclosed  
Net 30 Days  
C. O. D. }

If 30 Day  
Terms Attach  
References

Name \_\_\_\_\_

Address \_\_\_\_\_

**ORDER  
NOW WITH  
THIS COUPON**

EASIER TO INSTALL

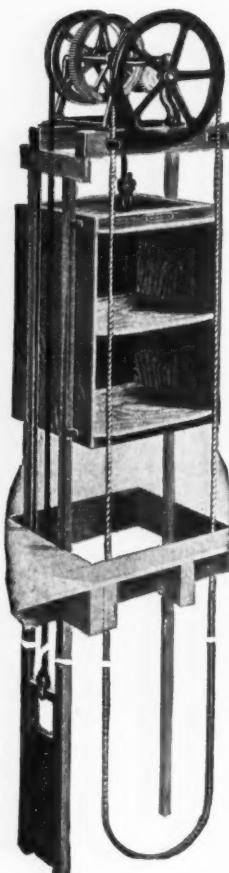
*Announcing the*

# NEW

## SEDGWICK TYPE "FDCCG"

## DUMB WAITER

**Two Exclusive  
Improvements  
Assure  
Longer Life,  
Easier  
Operation,  
Unfailing  
Brake Action**



Type "FDCCG" is equipped with Full Diameter Hoist Wheel and Cut Gears, thus embodying the greatest advance in many years in vertical transportation. The number of moving parts in the mechanism has been reduced, permitting of easier installation and better service.

Five standard sizes, from 20"x16" to 36"x36", carried in stock at our factory. Special sizes in 4 days.

**Special Service for Contractors**  
includes Blueprints, Illustrations  
and Specifications.

**SEDWICK MACHINE WORKS**  
154 West 15th Street

New York

SEDWICK MACHINE WORKS  
154 West 15th Street, New York

Please send full information on Dumb Waiters, Freight Elevators, Trunk Lifts, Invalid Elevators, Sidewalk Elevators and Gravity Drops.

Name.....

Address.....

### Books, Bulletins and Catalogs for You

THE literature and publications listed here are available to the readers of American Builder. They may be obtained from the firms mentioned and will be forwarded without cost except where a price is noted.

"Treasure Island—Its Surroundings" is the title of a booklet just issued by S. F. Bowser & Company, Inc., Fort Wayne, Ind. It is artistically designed and finely illustrates attractive and profitable filling stations. It contains descriptive comment on the design and construction of filling stations by a member of the American Institute of Architects, also perspective sketches and designs for many different filling station types, locations, sizes and shapes with approximate costs.

The Eagle Grinding Machine Company, 16-20 Elk Street, Buffalo, N. Y., presents a new catalog of its line of automatic knife grinding and saw sharpening machines for band and circular saws.

The Truscon Laboratories, Detroit, Mich., is distributing a reprint of a paper entitled "Soaps as Integral Waterproofings for Concrete" which was prepared by Alfred H. White and John H. Bateman, two authorities in this field, and presented at the American Concrete Institute in Chicago, February 23-26, 1926.

"Bostwick Economy" is the title of a booklet prepared by the Bostwick Steel Lath Company, Niles, Ohio, telling in non-technical language the savings accompanying the use of the various Bostwick products.

Keuffel & Esser Company, Hoboken, N. J., has issued a new catalog covering the K & E line of transits and levels for architects and builders.

The National Slate Association, 791 Drexel Building, Philadelphia, Pa., has published a most complete booklet on the subject of "Slate Roofs" which comprises a handbook with specifications, instructions for laying and similar matter.

The Delco-Light Company, Dayton, Ohio, has published, under the title "Model Kitchens," a booklet showing the prize winning and other selected designs in its Frigidaire Architectural Competition.

The Sandusky Cement Company, Cleveland, Ohio, has resumed publication of "The Medusa Review" which was discontinued in May, 1924. This periodical will be published bi-monthly for the benefit of building supply dealers. The first issue carries the date February-March, 1926.

The Youngstown Pressed Steel Company, 163 University Road, Warren, Ohio, has prepared a catalog of metal fire-proofing products which is full of good information including a supplement of specifications for metal lath construction.

The Southern Pine Association, New Orleans, La., has issued the first of a series of about 15 bulletins which it is preparing on the qualities and uses of Southern Pine. Bulletin No. 1 is "Southern Yellow Pine Flooring" and contains specification and design information and data for architects and engineers.

"The Graybar Tag" is the new name of the monthly publication of the Graybar Electric Co., Inc., 100 E. 42nd St., New York City, successor to the Supply Department of the Western Electric Co., formerly known as "Western Electric Dealer." The change in name is coincident with a change in viewpoint of the publication to include all activities of the company instead of merely merchandising material.

"Dierks Superior Pine News" is the new monthly publication of the Dierks Lumber & Coal Co., 700 Gates Bldg., Kansas City, Mo., which is intended to further a knowledge of the organization and understanding of its policies among the trade. The first issue is dated February, 1926.

# Adding Valuable Space to your house



USE THAT EXTRA ROOM

## The MARSCHKE COLLAPSIBLE STAIR

can be used in barns, garages, lake cottages, schools and in old as well as new houses. It is constructed on scientific principles, well balanced and is a convenience that every home owner will want. Easily operated—a slight pull on the cord opens the stair and unfolds it ready for use. Can be opened from above as well as below and is adjustable to any ceiling height. It will operate in a small hallway or a large closet. When closed it is folded into a compact bundle and hidden by a neat ceiling panel 26x56 in. in size. When partly open it serves as a ventilator. Dealers and Builders are invited to send for full particulars, without obligation.

Retail Price \$45.00 F. O. B. Factory

## The MARSCHKE CO.

301 Pioneer Building  
St. Paul, - - - Minn.

Adding Selling Value to the house  
and a convenience to the owner.

No Cables, Pulleys, Shafts or Drums  
No Bolts or Screws for Installation  
Not Only Attics Can We Reach  
But Roofs As Well for Recreation.

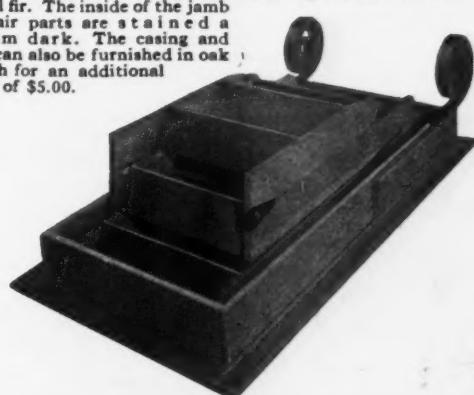
**EASILY OPERATED      EASY TO INSTALL  
STRONG AND DURABLE**



TO ROOF OR ATTIC

**Shipped in one compact bundle  
direct to consumer**

The Marschke Collapsible Stair is shipped in one compact bundle direct from factory to consumer. Shipping weight, about 120 lbs. The ceiling panel and casing are furnished in natural fir. The inside of the jamb and stair parts are stained a medium dark. The casing and panel can also be furnished in oak or birch for an additional charge of \$5.00.



## Books, Bulletins and Catalogs for You

THE literature and publications listed here are available to the readers of American Builder. They may be obtained from the firms mentioned and will be forwarded without cost except where a price is noted.

"A Home of Your Own," the new book by Della Thompson Lutes, was listed, on page 670 of the April AMERICAN BUILDER, as being published by W. T. Hunt & Company. This was an error, as this book, which retails for \$3.50, is published by The Bobbs-Merrill Company, Indianapolis, Ind.

"Defying Age and Time" is the title of an interesting booklet published by the Wheeling Metal & Manufacturing Company, of Wheeling, W. Va., to tell the story of its new product Leadclad, a lead covered, sheet steel roofing material.

The Holmes Disappearing Bed Co., Woodstock, Ill., has prepared a new booklet descriptive of its various styles of concealed beds and their use in the home.

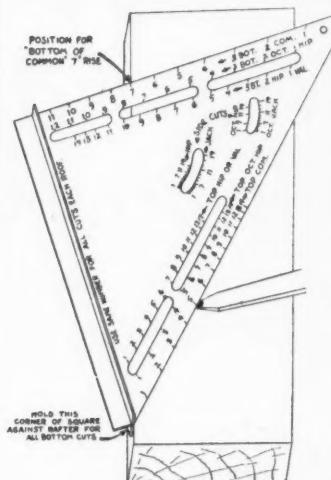
"Grading Rules—for maple, beech and birch flooring" is the title of a new booklet published by the Maple Flooring Manufacturers' Association, Stock Exchange Building, Chicago.

A. C. Horn Company, Long Island City, Long Island, N. Y., has prepared a special, limited edition catalog which has been mailed to a limited list. It is beautifully illustrated in colors which give an effective presentation of this company's Keramik finishes.

The Donley Brothers Co., 13900 Miles Ave., Cleveland, Ohio, offers the tenth edition of the Donley catalog under the title, "Complete the Home with Donley Devices."

The Patent Scaffolding Company, 1550 Dayton Street, Chicago, offers a new catalog, No. 20, of its line of Gold Medal ladders and scaffolding.

## THE SWANSON SPEED SQUARE MAKES ROOF FRAMING EASY



Only *one* number to remember for all cuts on each roof. Only *two* major positions for all cuts on any roof. Any cut marked as easily as tho a bevel square had been set especially for it.

Using the corner of the square as a pivot it can be swung to any position.

All markings plain and easily read, being stamped on aluminum. Will not rust or become hard to read. No misfits happen when using the Swanson Speed Square.

Send for booklet of rafter lengths for all buildings up to 48 feet in width and from 1 to 14 inch rise per foot run. Lengths are figured for building widths in inches as well as even feet. Common rafters, hips and jacks, are all included in the table. Includes a wealth of complete figures ready for use. Order one today. The booklet is 30 cents or complete with square \$2.10 postpaid—or your dealer can supply you.

*Satisfaction guaranteed or your money back*

**THE SWANSON SQUARE CO.**  
7 North Fourth Ave. Maywood, Ill.



These **HEAT WAVES** show how the heat **RISES** and **ESCAPES** through the roof and walls of your house

That's what makes the snow melt so fast on your roof. Do you like to buy coal to melt snow? This is sheer waste, and you can stop it by insulating the roof and walls of your house with

## CABOT'S Heat ~ "QUILT"

You can lay Quilt under your shingles, siding, tiles or boarding, or between your studs or rafters or under your attic floor. It will save enough coal to pay for itself in two or three winters, and keep on saving heat and doctor's bills and making you comfortable as long as the house stands.

*Send for Free Sample of Quilt and full information*



**SAMUEL CABOT, Inc.**  
141 Milk Street Boston, Mass.

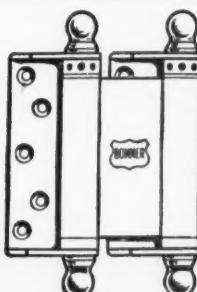
342 Madison Avenue, New York  
5000 Bloomingdale Ave., Chicago  
Los Angeles Portland

*Cabot's Creosote Stains, Waterproof Collophane, Old Virginia White, Double-White, etc.*

## Buy the Best HARDWARE For Hard-wear

For more than 48 years Bommer Spring Hinges have maintained their leadership and proven their superiority over all others.

They have kept pace with the times, because they have been kept up with the times whenever improvement was possible.



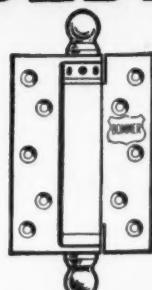
# BOMMER SPRING HINGES ARE THE BEST

They are in universal demand—easiest to apply and the most satisfactory spring hinges made.

Your Dealer handles them.

Send for New Catalog 47. It is a big help in ordering.

**Bommer Spring Hinge Company**  
MANUFACTURERS  
BROOKLYN, N. Y.



Frantz Quality  
Proves Its Sterling Worth

# FRANTZ

TRADE MARK

## GUARANTEED, BUILDERS' HARDWARE



**Made in Two Types**

*Glide No. 1—Flexible;  
Glide No. 2—Adjustable*

Packed in strong fibre carton, complete with bolts, lag screws, end stops for track, socket wrench, name plates, and direction sheet.

Distinguish the  
hardware by  
the label

### Perfect Service Year After Year

When you have done a good job, built a barn that will stand for years, finish it off with

## GLIDE Barn Door Hangers

*with the original waterproof track*

and you can know that the fixtures will last as long as the barn.

The bright red FRANTZ label has grown to mean the best in building hardware to thousands of contractors who realize the value of satisfying their customers and specify FRANTZ.

Easily installed. We guarantee satisfaction. Carries doors of any thickness without blocking the track away from the building. Drop strap is on inside of door—adjustable type is adjusted from inside.

Wheels and axles are larger, with roller bearings. Derailing impossible. Patented Glide waterproof track is bird proof, rust-resisting. Made in one piece with patented joints that nest together.

*Sold by our authorized dealer in every town.*

*Write for his name.*

Made by  
**FRANTZ MANUFACTURING CO.**  
Sterling, Illinois

